

260 265 270
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 275 280 285
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 290 295 300
 Arg Leu Ala Arg Gly His Ser Leu
 305 310

<210> 475
 <211> 621
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep78 54 228 GCC GCC

<400> 475
 Thr Ala Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
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 Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
 20 25 30
 Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
 35 40 45
 Glu Gln Ala Pro Leu Ala Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
 50 55 60
 Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
 65 70 75 80
 Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
 85 90 95
 Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
 100 105 110
 Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu
 115 120 125
 Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
 130 135 140
 Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160
 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu
 165 170 175
 Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Ala Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 275 280 285
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400

Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475				480	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			485					490						495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
	530					535					540				
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
545					550					555					560
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			565					570						575	
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
			580					585					590		
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		595					600					605			
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
	610					615					620				

<210> 476

<211> 397

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep52 54 228 GCC GCC

<400> 476

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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		35					40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50				55					60					
Pro	Val	Glu	Asp	Ile	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	
65					70				75					80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
			85					90						95	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			100					105					110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115					120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
	130					135					140				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145					150					155					160
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
			165					170						175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			180					185					190		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
		195					200					205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
	210				215						220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln


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Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 290                295          300
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305                310          315
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
                325          330          335
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
                340          345          350
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
                355          360          365
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370                375          380
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385                390          395
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
                405          410          415
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
                420          425          430
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
                435          440          445
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 450                455          460
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 465                470          475
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
                485          490          495
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
                500          505          510
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
                515          520          525
Arg Leu Ala Arg Gly His Ser Leu
 530                535

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<210> 478
 <211> 312
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep40 54 228 GCC GCC

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<400> 478
Met Glu Leu Ala Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 1                5          10          15
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
                20          25          30
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
                35          40          45
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50                55          60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65                70          75          80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
                85          90          95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
                100          105          110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
                115          120          125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
                130          135          140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145                150          155          160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
                165          170          175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
                180          185          190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser

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Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 405 410 415
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 420 425 430
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 435 440 445
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 450 455 460
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 465 470 475 480
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 485 490 495
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ala Val
 500 505 510
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 515 520 525
 Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
 530 535 540
 Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
 545 550 555 560
 Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
 565 570 575
 Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
 580 585 590
 Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
 595 600 605
 Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
 610 615 620

<210> 480

<211> 397

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep52 96 125 511 GCA GCG GCA

<400> 480

Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 1 5 10 15
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20 25 30
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50 55 60
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85 90 95
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 100 105 110
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg

Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			180					185					190		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
		195					200					205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		210				215					220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225					230					235					240
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
				245					250					255	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			260					265					270		
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ala	Val
		275					280					285			
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		290				295					300				
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
305					310					315					320
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
				325					330					335	
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			340					345					350		
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
		355					360					365			
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		370				375					380				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
385					390					395					

<210> 481

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 96 125 511 GCA GCG GCA

<400> 481

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
		50				55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Ala
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Ala	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
		130				135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
		210				215						220			

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475				480	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			485						490					495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ala	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu								
	530					535									

<210> 482

<211> 312

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep40 96 125 511 GCA GCG GCA

<400> 482

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		35					40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50					55				60					
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65					70					75				80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
			85					90					95		
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			100				105						110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115				120						125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp

130	Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala	135	140
145	Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg	150	155
	165	170	175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val	180	185	190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser	195	200	205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe	210	215	220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln	225	230	235
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val	245	250	255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala	260	265	270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ala Val	275	280	285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp	290	295	300
Arg Leu Ala Arg Gly His Ser Leu	305	310	

<210> 483
 <211> 621
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep78 54 163 GCC GCT

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Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu	20	25	30		
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile	35	40	45		
Glu Gln Ala Pro Leu Ala Val Ala Glu Lys Leu Gln Arg Asp Phe Leu	50	55	60		
Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val	65	70	75		80
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu	85	90	95		
Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile	100	105	110		
Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu	115	120	125		
Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly	130	135	140		
Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys	145	150	155		160
Thr Gln Ala Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu	165	170	175		
Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His	180	185	190		
Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn	195	200	205		
Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr	210	215	220		
Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys	225	230	235		240
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala	245	250	255		
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys	260	265	270		

Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
	305				310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340				345						350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
	385				390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			405						410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
		420					425						430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440						445		
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
	465				470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			485						490					495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
		500					505						510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
	530					535					540				
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
	545				550					555					560
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			565						570					575	
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
			580				585						590		
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		595					600					605			
Leu	Val	Asn	Val	Asp	Leu	Asp	Cys	Ile	Phe	Glu	Gln				
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<210> 484

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 54 163 GCC GCT

<400> 484

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Ala	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
	65				70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
			85					90					95		
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile

Arg	Glu	Lys	100	Leu	Ile	Gln	Arg	Ile	105	Tyr	Arg	Gly	Ile	Glu	110	Pro	Thr	Leu
		115						120						125				
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly			
	130						135				140							
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys			
145				150						155					160			
Thr	Gln	Ala	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu			
			165					170						175				
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His			
		180						185					190					
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn			
	195						200					205						
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr			
	210					215					220							
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys			
225				230						235					240			
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala			
			245					250						255				
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys			
	260							265					270					
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln			
	275						280					285						
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu			
	290				295						300							
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala			
305				310					315						320			
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala			
			325					330						335				
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro			
		340						345					350					
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp			
	355						360				365							
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala			
	370				375						380							
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg			
385				390					395						400			
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
		405						410						415				
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser			
	420						425						430					
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
	435						440					445						
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
	450				455						460							
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
465				470					475						480			
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
		485						490						495				
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
	500						505						510					
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
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Arg	Leu	Ala	Arg	Gly	His	Ser	Leu											
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<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 197 420 GCG GCC

<400> 485

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85				90						95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ala	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Ser	Lys	Val	Arg	
385					390					395				400	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ala	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420				425						430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475				480	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
				485					490					495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
	530					535					540				
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys

545					550					555					560
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
				565					570					575	
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
			580					585					590		
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		595					600					605			
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
	610				615						620				

<210> 486

<211> 397

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep52 197 420 GCG GCC

<400> 486

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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25				30			
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		35					40				45				
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50				55						60				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65				70						75				80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
		85						90					95		
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
		100					105					110			
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115					120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
	130					135					140				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145				150						155				160	
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
		165						170					175		
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
		180					185					190			
Ile	Val	Thr	Ala	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
		195					200					205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		210				215					220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225				230						235				240	
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
		245						250					255		
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
		260					265					270			
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
		275					280					285			
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
	290					295					300				
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
305				310						315				320	
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
		325						330					335		
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
		340					345					350			
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
		355				360					365				
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
	370				375						380				

Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
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<210> 487

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 197 420 GCG GCC

<400> 487

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
		130				135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155				160	
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ala	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
		210				215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235				240	
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
		290				295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315				320	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
		370				375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395				400	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ala	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe

10023249-101701

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Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
      450              455              460
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
465              470              475
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
      485              490              495
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
      500              505              510
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
      515              520              525
Arg Leu Ala Arg Gly His Ser Leu
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<210> 488
 <211> 312
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep40 197 420 GCG GCC

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<400> 488
Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
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Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
      20              25              30
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
      35              40              45
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
      50              55              60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
      65              70              75              80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
      85              90              95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
      100              105              110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
      115              120              125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
      130              135              140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
      145              150              155              160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
      165              170              175              180
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
      185              190              195
Ile Val Thr Ala Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
      200              205              210
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
      215              220              225
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
      230              235              240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
      245              250              255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
      260              265              270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
      275              280              285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
      290              295              300
Arg Leu Ala Arg Gly His Ser Leu
      305              310

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<210> 489
 <211> 621
 <212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 334 428 499 GCG GCT GCC

<400> 489

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280						285		
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Ala	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ala	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala

1002249-121701

Pro	Ser	Ala	Ala	485	Asp	Ile	Ser	Glu	Pro	490	Lys	Arg	Val	Arg	Glu	495	Ser	Val
Ala	Gln	Pro	500	Thr	Ser	Asp	Ala	Glu	505	Ala	Ser	Ile	Asn	Tyr	Ala	510	Asp	
Arg	Tyr	Gln	515	Asn	Lys	Cys	Ser	Arg	520	His	Val	Gly	Met	Asn	Leu	Met	Leu	
Phe	Pro	Cys	530	Arg	Gln	Cys	Glu	Arg	535	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys	
545	Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	550	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu	
Ser	Gln	Pro	565	Val	Ser	Val	Val	Lys	570	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr	
Ile	His	His	580	Ile	Met	Gly	Lys	Val	585	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp	
Leu	Val	Asn	595	Val	Asp	Leu	Asp	Asp	600	Cys	Ile	Phe	Glu	Gln				
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<210> 490

<211> 397

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep52 334 428 499 GCG GCT GCC

<400> 490

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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala			
			20					25						30				
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys			
		35					40					45						
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln			
50					55						60							
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu			
65					70					75					80			
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala			
				85				90						95				
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Ala	Pro	Ala			
			100					105						110				
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro			
		115					120					125						
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp			
		130				135					140							
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala			
145					150					155					160			
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg			
				165						170					175			
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
			180					185						190				
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ala	Asp	Gly	Asn	Ser			
		195					200						205					
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
		210				215					220							
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
225					230					235					240			
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
				245						250					255			
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
			260					265						270				
Pro	Ser	Ala	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
		275					280							285				
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
		290				295					300							
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu			
305					310					315					320			

	370						375						380					
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg			
385					390					395					400			
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
				405					410						415			
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ala	Asp	Gly	Asn	Ser			
			420					425					430					
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
		435					440					445						
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
		450				455					460							
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
465					470					475					480			
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
				485					490					495				
Pro	Ser	Ala	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
			500					505					510					
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
		515					520					525						
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu											
	530					535												

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<210> 492
<211> 312
<212> PRT
<213> Artificial Sequence
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<400> 492																
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			20					25					30			
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys	
		35					40					45				
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln	
	50					55					60					
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	
65					70					75					80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala	
				85					90					95		
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Ala	Pro	Ala	
			100					105					110			
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro	
		115					120					125				
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	
	130					135					140					
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala	
145					150					155					160	
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg	
				165					170					175		
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val	
			180					185					190			
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ala	Asp	Gly	Asn	Ser	
		195					200					205				
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe	
	210					215					220					
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln	
225					230					235					240	
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val	
				245					250					255		
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala	
			260					265					270			
Pro	Ser	Ala	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val	
		275					280					285				

Thr	Thr	Phe	420	Glu	His	Gln	Gln	Pro	425	Leu	Gln	Asp	Arg	Met	430	Phe	Lys	Phe
		435						440						445				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
	450					455					460							
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
465					470					475					480			
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
			485					490						495				
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
		500						505					510					
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
	515						520					525						
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu			
	530					535					540							
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys			
545					550					555					560			
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu			
			565						570					575				
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr			
		580						585					590					
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp			
	595					600						605						
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln						
	610					615					620							

<210> 494

<211> 397

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep52 197 414 GCG GCT

<400> 494

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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
		20					25					30			
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
	35					40					45				
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50				55					60					
Pro	Val	Glu	Asp	Ile	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	
65				70				75						80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
	85						90					95			
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
	100						105					110			
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
	115					120					125				
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
	130					135				140					
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145					150					155					160
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
			165					170						175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Ala	Pro	Val
	180						185					190			
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
	195					200					205				
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
	210					215					220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225					230					235					240
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
			245						250					255	

Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 275 280 285
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 290 295 300
 Arg Leu Ala Arg Gly His Ser Leu
 305 310

<210> 497

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 30 54 127 GCG GCC GCT

<400> 497

Thr Ala Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
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 Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Ala Glu
 20 25 30
 Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
 35 40 45
 Glu Gln Ala Pro Leu Ala Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
 50 55 60
 Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
 65 70 75 80
 Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
 85 90 95
 Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
 100 105 110
 Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Ala Leu
 115 120 125
 Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
 130 135 140
 Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160
 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu
 165 170 175
 Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 275 280 285
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp

Cys	Val	355	Asp	Lys	Met	Val	Ile	360	Trp	Trp	Glu	Glu	Gly	365	Lys	Met	Thr	Ala
	370						375						380					
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg			
385					390					395					400			
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
				405					410						415			
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser			
			420				425						430					
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
		435					440						445					
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
	450					455					460							
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
465					470					475					480			
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
			485					490						495				
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
			500					505					510					
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
		515					520					525						
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu			
	530					535					540							
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys			
545					550					555					560			
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu			
			565					570						575				
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr			
			580					585					590					
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp			
		595					600					605						
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln						
	610					615						620						

<210> 498

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 30 54 127 GCG GCC GCT

<400> 498

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
1				5					10					15	
Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Ala	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Ala	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
			85					90						95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Ala	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
			165					170						175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		

Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
	225				230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	275						280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
	305				310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
	385				390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
	465				470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
				485					490					495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu								
	530					535									

<210> 499

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 29 260 GCG GCG

<400> 499

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Ala	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
	65				70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile

1002249-121701

Arg	Glu	Lys	100	Leu	Ile	Gln	Arg	Ile	105	Tyr	Arg	Gly	Ile	Glu	110	Pro	Thr	Leu
		115						120						125				
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly			
	130						135				140							
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys			
145					150					155					160			
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu			
				165					170						175			
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His			
			180					185						190				
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn			
		195					200					205						
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr			
	210					215					220							
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys			
225					230					235					240			
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala			
				245					250					255				
Ser	Asn	Ser	Ala	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys			
			260					265						270				
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln			
		275					280							285				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu			
	290					295					300							
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala			
305					310					315					320			
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala			
				325				330						335				
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro			
			340					345						350				
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp			
		355					360					365						
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala			
	370					375					380							
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg			
385					390					395					400			
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
				405					410					415				
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser			
		420						425						430				
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
		435					440							445				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
	450					455					460							
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
465					470					475					480			
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
				485				490						495				
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
			500					505						510				
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
		515					520							525				
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu			
	530					535					540							
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys			
545					550					555					560			
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu			
				565					570						575			
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr			
				580				585						590				
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp			
		595					600							605				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln						
	610					615						620						

<210> 500

<211> 397
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep52 29 260 GCG GCG

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 Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 1 5 10 15
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20 25 30
 Ser Asn Ser Ala Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50 55 60
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85 90 95
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 100 105 110
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 180 185 190
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 195 200 205
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 210 215 220
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240
 Glu Val Lys Asp Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 275 280 285
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 290 295 300
 Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
 305 310 315 320
 Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
 325 330 335
 Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
 340 345 350
 Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
 355 360 365
 Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
 370 375 380
 Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
 385 390 395

<210> 501
 <211> 536
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep68 29 260 GCG GCG

Arg Leu Ala Arg Gly His Ser Leu
530 535

<210> 502
<211> 312
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant rep protein: rep40 29 260 GCG GCG

<400> 502.
Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
1 5 10 15
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
20 25 30
Ser Asn Ser Ala Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
35 40 45
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
50 55 60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
65 70 75 80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
85 90 95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
100 105 110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
115 120 125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
130 135 140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145 150 155 160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165 170 175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
180 185 190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
195 200 205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
210 215 220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
225 230 235 240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
245 250 255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
260 265 270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
275 280 285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
290 295 300
Arg Leu Ala Arg Gly His Ser Leu
305 310

<210> 503
<211> 621
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant rep protein: rep78 4 484 GCT GCC

<400> 503
Thr Ala Gly Ala Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
1 5 10 15
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
20 25 30
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile

Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
50	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390										

Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
 580 585 590
 Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
 595 600 605
 Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
 610 615 620

<210> 504
 <211> 397
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep52 4 484 GCT GCC

<400> 504
 Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 1 5 10 15
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20 25 30
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50 55 60
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85 90 95
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 100 105 110
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 180 185 190
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 195 200 205
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 210 215 220
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255
 Glu His Glu Ala Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 275 280 285
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 290 295 300
 Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
 305 310 315 320
 Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
 325 330 335
 Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
 340 345 350
 Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
 355 360 365
 Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
 370 375 380
 Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
 385 390 395

<210> 505
 <211> 536
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep68 4 484 GCT GCC

<400> 505
 Thr Ala Gly Ala Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
 1 5 10 15
 Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
 20 25 30
 Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
 35 40 45
 Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
 50 55 60
 Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
 65 70 75 80
 Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
 85 90 95
 Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
 100 105 110
 Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu
 115 120 125
 Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
 130 135 140
 Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160
 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu
 165 170 175
 Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 275 280 285
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 405 410 415
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 420 425 430
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 435 440 445
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 450 455 460

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Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 465 470 475 480
 Glu His Glu Ala Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 485 490 495
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 500 505 510
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 515 520 525
 Arg Leu Ala Arg Gly His Ser Leu
 530 535

<210> 506
 <211> 312
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep40 4 484 GCT GCC

<400> 506
 Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 1 5 10 15
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20 25 30
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50 55 60
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85 90 95
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 100 105 110
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 180 185 190
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 195 200 205
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 210 215 220
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255
 Glu His Glu Ala Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 275 280 285
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 290 295 300
 Arg Leu Ala Arg Gly His Ser Leu
 305 310

<210> 507
 <211> 621
 <212> PRT
 <213> Artificial Sequence

<220>

Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
		530					535				540				
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
		545				550				555					560
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			565						570					575	
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
			580					585					590		
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		595					600						605		
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
		610				615						620			

<210> 508
 <211> 397
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep52 258 124 132 GCC GCC GCC

<400> 508
Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
1 5 10 15
Gln Trp Ile Gln Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
20 25 30
Ser Ala Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
35 40 45
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
50 55 60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
65 70 75 80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
85 90 95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
100 105 110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
115 120 125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
130 135 140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145 150 155 160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165 170 175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
180 185 190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
195 200 205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
210 215 220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
225 230 235 240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
245 250 255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
260 265 270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
275 280 285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
290 295 300
Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
305 310 315 320
Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
325 330 335
Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu

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Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
		340						345					350		
Ile	His	355	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		370				375					380				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
385					390					395					

<210> 509
 <211> 536
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep68 258 124 132 GCC GCC GCC

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
1			5						10					15	
Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
		50				55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
			85					90						95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105						110	
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ala	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Ala	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
		130				135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
					165				170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
		210				215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Ala	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280						285		
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
		290				295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
		370				375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400

305

310

<210> 511

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 231 497 GCC GCC

<400> 511

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
1				5					10					15	
Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
		50				55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
			85					90					95		
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
		130				135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
		210				215					220				
Met	Glu	Leu	Val	Gly	Trp	Ala	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225				230						235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280						285		
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
		290				295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			

1002249-2470
 1002249-2470

Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 450 455
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 465 470 475 480
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 485 490 495
 Ala Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 500 505 510
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 515 520 525
 Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
 530 535 540
 Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
 545 550 555 560
 Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
 565 570 575
 Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
 580 585 590
 Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
 595 600 605
 Leu Val Asn Val Asp Leu Asp Cys Ile Phe Glu Gln
 610 615 620

<210> 512
 <211> 397
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep52 231 497 GCC GCC

<400> 512
 Met Glu Leu Val Gly Trp Ala Val Asp Lys Gly Ile Thr Ser Glu Lys
 1 5 10 15
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20 25 30
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50 55 60
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85 90 95
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 100 105 110
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 180 185 190
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 195 200 205
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 210 215 220
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270
 Ala Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val

Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
275						280					285				
290						295					300				
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
305					310					315					320
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
				325					330					335	
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			340					345					350		
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
		355					360					365			
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
	370					375					380				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
385					390					395					

<210> 513
 <211> 536
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep68 231 497 GCC GCC

<400> 513

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
			85					90						95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
			165					170						175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
		180					185						190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Ala	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			245					250						255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		260					265						270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			325						330					335	

Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
		370				375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390				395						400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			405					410						415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			485					490						495	
Ala	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515				520						525			
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu								
	530					535									

<210> 514

<211> 312

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep40 231 497 GCC GCC

<400> 514

Met	Glu	Leu	Val	Gly	Trp	Ala	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		35					40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50				55						60				
Pro	Val	Glu	Asp	Ile	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	
65					70				75					80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
			85					90						95	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			100					105					110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115					120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
	130					135					140				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145					150					155					160
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
			165					170						175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			180					185					190		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
		195					200					205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		210				215					220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225					230					235					240
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val

Glu	His	Glu	Phe	245	Tyr	Val	Lys	Lys	250	Gly	Gly	Ala	Lys	Lys	255	Arg	Pro	Ala
Ala	Ser	Asp	260	Ala	Asp	Ile	Ser	Glu	265	Pro	Lys	Arg	Val	Arg	270	Glu	Ser	Val
Ala	Gln	Pro	275	Ser	Thr	Ser	Asp	280	Ala	Glu	Ala	Ser	Ile	285	Asn	Tyr	Ala	Asp
Arg	Leu	Ala	290	Arg	Gly	His	Ser	Leu	300									
305							310											

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 <211> 621
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep78 221 258 GCA GCC

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50				55					60					
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65				70					75					80	
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
			85					90					95		
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
	115						120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145				150					155					160	
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
			165					170					175		
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180				185					190			
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
	195						200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ala	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225				230					235					240	
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			245					250					255		
Ser	Ala	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	275						280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305				310					315					320	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			325					330					335		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345				350			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
	355						360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				

Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
		290					295				300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
		370				375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
		450				455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
				485					490					495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu								
		530				535									

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<213> Artificial Sequence

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<223> Mutant rep protein: rep40 221 258 GCA GCC

<400> 518

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Ala	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		35					40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50					55				60					
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65					70					75				80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
			85					90					95		
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			100					105					110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115					120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		130				135					140				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145					150					155					160
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
				165					170					175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val

Ile	Val	Thr	180	Ser	Asn	Thr	Asn	Met	185	Cys	Ala	Val	Ile	Asp	190	Gly	Asn	Ser
Thr	Thr	Phe	195	Glu	His	Gln	Gln	Pro	200	Leu	Gln	Asp	Arg	Met	205	Phe	Lys	Phe
Glu	Leu	Thr	210	Arg	Arg	Leu	215	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln	
225						230						235					240	
Glu	Val	Lys	245	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val		
Glu	His	Glu	260	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala		
Pro	Ser	Asp	275	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val		
Ala	Gln	Pro	290	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp		
Arg	Leu	Ala		Arg	Gly	His	Ser	Leu				300						
305						310												

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 <212> PRT
 <213> Artificial Sequence

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 <223> Mutant rep protein: rep78 234 264 326 GCG GCG GCC

<400> 519

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
		50				55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
		130				135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
		210				215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Ala	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Ala	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
		290				295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320

Thr	Lys	Lys	Phe	Gly	Ala	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
				340				345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
				355			360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
				370		375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405				410						415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
				420				425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
				435			440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
				450		455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
				485				490						495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
			515				520					525			
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
						535					540				
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
545					550					555					560
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
				565				570						575	
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
				580				585					590		
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		595					600					605			
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
	610					615					620				

<210> 520

<211> 397

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep52 234 264 326 GCG GCG GCC

<400> 520

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Ala	Gly	Ile	Thr	Ser	Glu	Lys
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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20				25					30			
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Ala	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		35				40						45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50					55					60				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65					70					75					80
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
				85				90						95	
Thr	Lys	Lys	Phe	Gly	Ala	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				100				105					110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
				115			120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
	130					135					140				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala

145					150					155					160
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
				165					170					175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			180					185					190		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
		195					200					205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		210					215				220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225					230					235					240
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
				245					250					255	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			260					265					270		
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
		275					280					285			
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		290				295					300				
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
305					310					315					320
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
				325					330					335	
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			340					345					350		
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
		355					360					365			
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		370				375					380				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
385					390					395					

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 234 264 326 GCG GCG GCC

<400> 521

Thr 1	Ala	Gly	Phe	Tyr 5	Glu	Ile	Val	Ile	Lys 10	Val	Pro	Ser	Asp	Leu 15	Asp
Glu	His	Leu	Pro	Gly 20	Ile	Ser	Asp	Ser	Phe 25	Val	Asn	Trp	Val	Ala 30	Glu
Lys	Glu	Trp	Glu	Leu 35	Pro	Pro	Asp 40	Ser	Asp	Met	Asp	Leu 45	Asn	Leu	Ile
Glu	Gln	Ala	Pro	Leu 50	Thr	Val 55	Ala	Glu	Lys	Leu 60	Gln	Arg	Asp	Phe	Leu
Thr 65	Glu	Trp	Arg	Arg 70	Val	Ser	Lys	Ala	Pro	Glu 75	Ala	Leu	Phe	Phe 80	Val
Gln	Phe	Glu	Lys	Gly 85	Glu	Ser	Tyr	Phe	His 90	Met	His	Val	Leu	Val 95	Glu
Thr	Thr	Gly	Val 100	Lys	Ser	Met	Val 105	Leu	Gly	Arg	Phe	Leu 110	Ser	Gln	Ile
Arg	Glu	Lys 115	Leu	Ile	Gln	Arg	Ile 120	Tyr	Arg	Gly	Ile 125	Glu	Pro	Thr	Leu
Pro	Asn 130	Trp	Phe	Ala	Val	Thr 135	Lys	Thr	Arg	Asn	Gly 140	Ala	Gly	Gly	Gly
Asn 145	Lys	Val	Val	Asp 150	Glu	Cys	Tyr	Ile	Pro	Asn 155	Tyr	Leu	Leu	Pro	Lys 160
Thr	Gln	Pro	Glu	Leu 165	Gln	Trp	Ala	Trp	Thr 170	Asn	Met	Glu	Gln	Tyr 175	Leu
Ser	Ala	Cys	Leu 180	Asn	Leu	Thr	Glu 185	Arg	Lys	Arg	Leu 190	Val	Ala	Gln	His
Leu	Thr	His 195	Val	Ser	Gln	Thr 200	Gln	Glu	Gln	Asn	Lys 205	Glu	Asn	Gln	Asn

Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
210						215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Ala	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Ala	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
				260				265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
				275			280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Ala	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
				340				345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
				355			360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
				420				425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
				435			440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
					455						460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
				485					490					495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu								
	530					535									

<210> 522

<211> 312

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep40 234 264 326 GCG GCG GCC

<400> 522

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Ala	Gly	Ile	Thr	Ser	Glu	Lys
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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Ala	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			35				40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50					55					60				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65					70					75				80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
				85					90					95	
Thr	Lys	Lys	Phe	Gly	Ala	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			100				105						110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro

Ser	Asn	Ser	Arg 260	Ser	Gln	Ile	Lys	Ala 265	Ala	Leu	Asp	Asn	Ala 270	Gly	Lys
Ile	Met	Ser 275	Leu	Thr	Lys	Thr	Ala 280	Pro	Asp	Tyr	Leu	Val 285	Gly	Gln	Gln
Pro	Val 290	Glu	Asp	Ile	Ser	Ser 295	Asn	Arg	Ile	Tyr	Lys 300	Ile	Leu	Glu	Leu
Asn 305	Gly	Tyr	Asp	Pro	Gln	Tyr 310	Ala	Ala	Ser	Val 315	Phe	Leu	Gly	Trp	Ala 320
Thr	Lys	Lys	Phe 325	Gly	Lys	Arg	Asn	Thr	Ile 330	Trp	Leu	Phe	Gly	Pro	Ala 335
Thr	Thr	Gly 340	Lys	Thr	Asn	Ile	Ala 345	Glu	Ala	Ile	Ala	His 350	Thr	Val	Pro
Phe	Tyr	Gly 355	Cys	Val	Asn	Trp	Thr 360	Asn	Glu	Asn	Phe	Pro 365	Phe	Asn	Asp
Cys	Val 370	Asp	Lys	Met	Val	Ile 375	Trp	Trp	Glu	Glu	Gly 380	Lys	Met	Thr	Ala
Lys 385	Val	Val	Glu	Ser	Ala 390	Lys	Ala	Ile	Leu	Gly 395	Gly	Ser	Ala	Val	Arg 400
Val	Asp	Gln	Lys 405	Cys	Lys	Ser	Ser	Ala	Gln 410	Ile	Asp	Pro	Thr	Pro	Val 415
Ile	Val	Thr 420	Ser	Asn	Thr	Asn	Met 425	Cys	Ala	Val	Ile	Asp	Gly 430	Asn	Ser
Thr	Thr 435	Phe	Glu	His	Gln	Gln	Pro 440	Leu	Gln	Asp	Arg	Met 445	Phe	Lys	Phe
Glu	Leu 450	Thr	Arg	Arg	Leu	Asp 455	His	Asp	Phe	Gly	Lys 460	Val	Thr	Lys	Gln
Glu 465	Val	Lys	Asp	Phe 470	Phe	Arg	Trp	Ala	Lys	Asp 475	His	Val	Val	Glu	Val 480
Glu	His	Glu	Phe 485	Tyr	Val	Lys	Lys	Gly 490	Gly	Ala	Lys	Lys	Arg	Pro	Ala 495
Pro	Ser	Asp	Ala 500	Asp	Ile	Ser	Glu	Pro 505	Lys	Arg	Val	Arg	Glu 510	Ser	Val
Ala	Gln 515	Pro	Ser	Thr	Ser	Asp	Ala 520	Glu	Ala	Ser	Ile	Asn 525	Tyr	Ala	Asp
Arg	Tyr 530	Gln	Asn	Lys	Cys	Ser 535	Arg	His	Val	Gly	Met 540	Asn	Leu	Met	Leu
Phe 545	Pro	Cys	Arg	Gln	Cys 550	Glu	Arg	Met	Asn	Gln 555	Asn	Ser	Asn	Ile	Cys 560
Phe	Thr	His	Gly 565	Gln	Lys	Asp	Cys	Leu	Glu 570	Cys	Phe	Pro	Val	Ser	Glu 575
Ser	Gln	Pro 580	Val	Ser	Val	Val	Lys	Lys 585	Ala	Tyr	Gln	Lys	Leu 590	Cys	Tyr
Ile	His 595	His	Ile	Met	Gly	Lys	Val 600	Pro	Asp	Ala	Cys	Thr 605	Ala	Cys	Asp
Leu	Val 610	Asn	Val	Asp	Leu	Asp 615	Asp	Cys	Ile	Phe 620	Glu	Gln			

<211> 397

<213> Art.

<220>

<223> Mutant rep protein: rep52 153 398 AGC GCG

<400> 524

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			35				40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
			50			55					60				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65					70					75				80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala

Thr	Lys	Lys	Phe	85	Gly	Lys	Arg	Asn	Thr	90	Ile	Trp	Leu	Phe	Gly	95	Pro	Ala
			100						105						110			
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro		
		115					120						125					
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp			
		130				135					140							
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala			
145					150					155					160			
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Ala	Val	Arg			
				165					170						175			
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
			180						185					190				
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser			
		195					200						205					
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
		210				215					220							
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
225					230					235					240			
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
				245					250					255				
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
			260					265					270					
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
		275					280						285					
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
		290				295					300							
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu			
305					310					315					320			
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys			
				325					330					335				
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu			
			340					345					350					
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr			
		355					360					365						
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp			
		370				375				380								
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln						
385					390					395								

<210> 525

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 153 398 AGC GCG

<400> 525

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
		50				55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90				95		
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
		130				135						140			

Asn 145	Lys	Val	Val	Asp	Glu 150	Cys	Tyr	Ser	Pro	Asn 155	Tyr	Leu	Leu	Pro	Lys 160
Thr	Gln	Pro	Glu	Leu 165	Gln	Trp	Ala	Trp	Thr 170	Asn	Met	Glu	Gln	Tyr 175	Leu
Ser	Ala	Cys	Leu 180	Asn	Leu	Thr	Glu	Arg 185	Lys	Arg	Leu	Val	Ala 190	Gln	His
Leu	Thr	His 195	Val	Ser	Gln	Thr	Gln 200	Glu	Gln	Asn	Lys	Glu 205	Asn	Gln	Asn
Pro	Asn 210	Ser	Asp	Ala	Pro	Val 215	Ile	Arg	Ser	Lys	Thr 220	Ser	Ala	Arg	Tyr
Met 225	Glu	Leu	Val	Gly 230	Trp	Leu	Val	Asp	Lys	Gly 235	Ile	Thr	Ser	Glu	Lys 240
Gln	Trp	Ile	Gln 245	Asp	Gln	Ala	Ser	Tyr 250	Ile	Ser	Phe	Asn	Ala 255	Gly	Lys
Ser	Asn	Ser	Arg 260	Ser	Gln	Ile	Lys	Ala 265	Ala	Leu	Asp	Asn	Ala 270	Gly	Lys
Ile	Met	Ser 275	Leu	Thr	Lys	Thr	Ala 280	Pro	Asp	Tyr	Leu 285	Val	Gly	Gln	Gln
Pro	Val 290	Glu	Asp	Ile	Ser	Ser 295	Asn	Arg	Ile	Tyr	Lys 300	Ile	Leu	Glu	Leu
Asn 305	Gly	Tyr	Asp	Pro	Gln 310	Tyr	Ala	Ala	Ser	Val 315	Phe	Leu	Gly	Trp	Ala 320
Thr	Lys	Lys	Phe 325	Gly	Lys	Arg	Asn	Thr	Ile 330	Trp	Leu	Phe	Gly	Pro 335	Ala
Thr	Thr	Gly 340	Lys	Thr	Asn	Ile	Ala 345	Glu	Ala	Ile	Ala	His	Thr 350	Val	Pro
Phe	Tyr 355	Gly	Cys	Val	Asn	Trp	Thr 360	Asn	Glu	Asn	Phe	Pro 365	Phe	Asn	Asp
Cys	Val 370	Asp	Lys	Met	Val	Ile 375	Trp	Trp	Glu	Glu	Gly 380	Lys	Met	Thr	Ala
Lys 385	Val	Val	Glu	Ser	Ala 390	Lys	Ala	Ile	Leu	Gly 395	Gly	Ser	Ala	Val	Arg 400
Val	Asp	Gln	Lys 405	Cys	Lys	Ser	Ser	Ala	Gln 410	Ile	Asp	Pro	Thr	Pro 415	Val
Ile	Val	Thr	Ser 420	Asn	Thr	Asn	Met	Cys 425	Ala	Val	Ile	Asp	Gly 430	Asn	Ser
Thr	Thr	Phe 435	Glu	His	Gln	Gln	Pro 440	Leu	Gln	Asp	Arg	Met 445	Phe	Lys	Phe
Glu	Leu 450	Thr	Arg	Arg	Leu	Asp 455	His	Asp	Phe	Gly	Lys 460	Val	Thr	Lys	Gln
Glu 465	Val	Lys	Asp	Phe	Phe 470	Arg	Trp	Ala	Lys	Asp 475	His	Val	Val	Glu	Val 480
Glu	His	Glu	Phe 485	Tyr	Val	Lys	Lys	Gly	Gly 490	Ala	Lys	Lys	Arg	Pro 495	Ala
Pro	Ser	Asp	Ala 500	Asp	Ile	Ser	Glu	Pro 505	Lys	Arg	Val	Arg	Glu 510	Ser	Val
Ala	Gln 515	Pro	Ser	Thr	Ser	Asp	Ala 520	Glu	Ala	Ser	Ile	Asn 525	Tyr	Ala	Asp
Arg	Leu 530	Ala	Arg	Gly	His	Ser 535	Leu								

<210> 526

<211> 312

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep40 153 398 AGC GCG

<400> 526

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		35					40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln

1002249-121701

50	Pro	Val	Glu	Asp	Ile	Ser	55	Ser	Asn	Arg	Ile	60	Tyr	Lys	Ile	Leu	Glu	Leu
65	Asn	Gly	Tyr	Asp	Pro	70	Gln	Tyr	Ala	Ala	Ser	75	Val	Phe	Leu	Gly	Trp	Ala
					85						90						95	
	Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	105	Trp	Leu	Phe	Gly	Pro	Ala	
				100											110			
	Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	120	Ile	Ala	His	Thr	Val	Pro	
				115										125				
	Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp		
							135					140						
	Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala		
145						150					155					160		
	Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Ala	Val	Arg		
					165					170						175		
	Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val		
					180				185						190			
	Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser		
					195			200						205				
	Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe		
						215						220						
	Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln		
225						230					235					240		
	Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val		
					245					250					255			
	Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala		
					260				265					270				
	Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val		
					275			280						285				
	Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp		
					290		295					300						
	Arg	Leu	Ala	Arg	Gly	His	Ser	Leu										
305						310												

<210> 527

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 53 216 GCG GCC

<400> 527

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				5					10						15	
	Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
				20					25					30		
	Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
				35				40					45			
	Glu	Gln	Ala	Pro	Ala	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
				50			55					60				
	Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65						70				75					80	
	Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95		
	Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
				100					105					110		
	Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
				115				120					125			
	Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
				130			135					140				
	Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145						150				155					160	
	Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175		
	Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
				180					185					190		

Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ala	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420					425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
				485					490					495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
	530					535					540				
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
545					550					555					560
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
				565					570					575	
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
			580					585					590		
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		595					600					605			
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
	610					615					620				

<210> 528

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 53 216 GCG GCC

<400> 528

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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu

			20					25					30			
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile	
		35					40					45				
Glu	Gln	Ala	Pro	Ala	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu	
	50					55					60					
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val	
65					70					75					80	
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu	
			85						90					95		
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile	
			100					105					110			
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu	
		115					120					125				
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly	
	130					135					140					
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys	
145					150					155					160	
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu	
			165						170					175		
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His	
			180					185					190			
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn	
		195					200					205				
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ala	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr	
	210					215					220					
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys	
225					230					235					240	
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala	
			245						250					255		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys	
			260					265					270			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln	
		275					280					285				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	
	290					295					300					
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala	
305					310					315					320	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala	
			325						330					335		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro	
			340					345					350			

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<211> 621
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep78 22 382 GCT GCG

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 Glu His Leu Pro Gly Ala Ser Asp Ser Phe Val Asn Trp Val Ala Glu
 20 25 30
 Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
 35 40 45
 Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
 50 55 60
 Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
 65 70 75 80
 Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
 85 90 95
 Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
 100 105 110
 Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu
 115 120 125
 Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
 130 135 140
 Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160
 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu
 165 170 175
 Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 275 280 285
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Ala Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 405 410 415
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 420 425 430
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 435 440 445
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 450 455 460
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val

1002249 12701

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465          470          475          480
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
      485          490          495
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
      500          505          510
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
      515          520          525
Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
      530          535          540
Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
545          550          555          560
Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
      565          570          575
Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
      580          585          590
Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
      595          600          605
Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
      610          615          620

<210> 530
<211> 397
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant rep protein: rep52 22 382 GCT GCG

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Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
      20      25      30
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
      35      40      45
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
      50      55      60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
65      70      75      80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
      85      90      95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
      100     105     110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
      115     120     125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
      130     135     140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Ala Thr Ala
145     150     155     160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
      165     170     175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
      180     185     190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
      195     200     205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
      210     215     220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
225     230     235     240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
      245     250     255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
      260     265     270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
      275     280     285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
      290     295     300

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Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
305					310					315					320
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
				325					330					335	
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			340					345					350		
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
		355					360					365			
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
	370					375					380				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
385					390					395					

<210> 531

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 22 382 GCT GCG

<400> 531

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
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Glu	His	Leu	Pro	Gly	Ala	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
			85						90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
			165						170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
		180						185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			245						250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			325						330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp

Cys	Val	355	Asp	Lys	Met	Val	Ile	360	Trp	Trp	Glu	Glu	Gly	Lys	365	Ala	Thr	Ala
	370						375						380					
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg			
385					390					395					400			
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
				405					410						415			
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser			
			420				425						430					
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
		435					440						445					
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
	450					455						460						
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
465					470					475					480			
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
				485					490					495				
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
			500					505					510					
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
		515					520					525						
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu											
	530					535												

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 <211> 312
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep40 22 382 GCT GCG

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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala			
			20					25					30					
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys			
		35					40					45						
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln			
	50					55					60							
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu			
65					70				75					80				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala			
				85				90					95					
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala			
			100					105					110					
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro			
		115					120					125						
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp			
	130					135					140							
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Ala	Thr	Ala			
145					150					155				160				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg			
				165					170					175				
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
			180					185					190					
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser			
		195					200					205						
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
	210					215						220						
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
225					230					235					240			
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
				245					250					255				
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
			260					265					270					

Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 275 280 285
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 290 295 300
 Arg Leu Ala Arg Gly His Ser Leu
 305 310

<210> 533

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 231 411 GCC GCA

<400> 533

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 20 25 30
 Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
 35 40 45
 Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
 50 55 60
 Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
 65 70 75 80
 Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
 85 90 95
 Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
 100 105 110
 Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu
 115 120 125
 Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
 130 135 140
 Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160
 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu
 165 170 175
 Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Ala Val Asp Lys Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 275 280 285
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 290 295 300
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 305 310 315 320
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 325 330 335
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 340 345 350
 Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 355 360 365
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 370 375 380
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 385 390 395 400
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ala Asp Pro Thr Pro Val

Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 275 280 285
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 290 295 300
 Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
 305 310 315 320
 Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
 325 330 335
 Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
 340 345 350
 Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
 355 360 365
 Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
 370 375 380
 Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
 385 390 395

<210> 535

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 231 411 GCC GCA

<400> 535

Thr Ala Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
 1 5 10 15
 Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
 20 25 30
 Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
 35 40 45
 Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
 50 55 60
 Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
 65 70 75 80
 Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
 85 90 95
 Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
 100 105 110
 Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu
 115 120 125
 Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
 130 135 140
 Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
 145 150 155 160
 Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu
 165 170 175
 Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His
 180 185 190
 Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
 195 200 205
 Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
 210 215 220
 Met Glu Leu Val Gly Trp Ala Val Asp Lys Gly Ile Thr Ser Glu Lys
 225 230 235 240
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 245 250 255
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Leu Asp Asn Ala Gly Lys
 260 265 270
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 275 280 285
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu

290	Asn Gly Tyr Asp Pro	295	Gln Tyr Ala Ala Ser	300	Val Phe Leu Gly Trp	Ala
305	Thr Lys Lys Phe Gly	310	Lys Arg Asn Thr Ile	315	Trp Leu Phe Gly	Pro Ala
		325	Asn Ile Ala Glu	330	Ile Ala His Thr	Val Pro
		340	Thr Asn Trp Thr	345	Asn Phe Pro Phe	Asn Asp
		355	Cys Val Ile Trp	360	Glu Glu Gly Lys	Met Thr Ala
		370	Lys Val Val Glu	375	Ala Lys Ala Ile	Leu Gly Gly Ser
		385	Val Asp Gln Lys	390	Cys Lys Ser Ser	Ala Gln Ala Asp
		405	Ile Val Thr Ser	410	Asn Thr Asn Met	Cys Ala Val Ile
		420	Thr Thr Phe Glu	425	His Gln Gln Pro	Leu Gln Asp Arg
		435	Glu Leu Thr Arg	440	Arg Arg Leu Asp	Phe Gly Lys Val
		450	Glu Val Lys Asp	455	Phe Phe Arg Trp	Ala Lys Asp His
		465	Glu His Glu Phe	470	Tyr Val Lys Lys	Gly Glu Ala Lys
		485	Pro Ser Asp Ala	490	Asp Ile Ser Glu	Pro Lys Arg Val
		500	Ala Gln Pro Ser	505	Thr Ser Asp Ala	Glu Ala Ser Ile
		515	Arg Leu Ala Arg	520	Gly His Ser Leu	
		530		535		

<210> 536

<211> 312

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep40 231 411 GCC GCA

<400> 536

Met Glu Leu Val Gly Trp	Ala Val Asp Lys Gly Ile Thr	Ser Glu Lys
1	5	10
Gln Trp Ile Gln Glu Asp	Gln Ala Ser Tyr Ile Ser	Phe Asn Ala Ala
20	25	30
Ser Asn Ser Arg Ser Gln	Ile Lys Ala Ala Leu Asp	Asn Ala Gly Lys
35	40	45
Ile Met Ser Leu Thr Lys	Thr Ala Pro Asp Tyr	Leu Val Gly Gln Gln
50	55	60
Pro Val Glu Asp Ile Ser	Ser Asn Arg Ile Tyr	Lys Ile Leu Glu Leu
65	70	75
Asn Gly Tyr Asp Pro	Gln Tyr Ala Ala Ser	Val Phe Leu Gly Trp
85	90	95
Thr Lys Lys Phe Gly	Lys Arg Asn Thr Ile	Trp Leu Phe Gly
100	105	110
Thr Thr Gly Lys Thr	Asn Ile Ala Glu	Ala Ile Ala His
115	120	125
Phe Tyr Gly Cys Val	Asn Trp Thr Asn	Glu Asn Phe Pro
130	135	140
Cys Val Asp Lys Met	Val Ile Trp Trp	Glu Glu Gly Lys
145	150	155
Lys Val Val Glu Ser	Ala Lys Ala Ile	Leu Gly Gly Ser
165	170	175
Val Asp Gln Lys Cys	Lys Ser Ser Ala	Gln Ala Asp Pro
180	185	190
Ile Val Thr Ser Asn	Thr Asn Met Cys	Ala Val Ile Asp
195	200	205

Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
	210					215					220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225					230					235					240
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
				245					250					255	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			260					265					270		
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
		275					280					285			
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
	290					295					300				
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu								
305					310										

<210> 537

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 59 305 GCG GCC

<400> 537

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
1				5					10					15	
Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Ala	Gln	Arg	Asp	Phe	Leu
	50					55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Ala	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro

			340					345					350			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	
		355					360					365				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala	
	370					375					380					
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg	
385					390					395					400	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val	
			405						410					415		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser	
			420					425					430			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe	
		435					440					445				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln	
	450					455					460					
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val	
465					470					475				480		
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala	
			485						490					495		
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val	
			500					505					510			
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp	
		515					520					525				
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu	
	530					535					540					
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys	
545					550					555				560		
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu	
			565						570					575		
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr	
			580					585					590			
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp	
		595					600					605				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln				
	610					615					620					

<210> 538

<211> 397

<212> PRT

<213> Artificial Sequence

 $\langle 220 \rangle$

<223> Mutant rep protein: rep52 59 305 GCG GCC

<400> 538

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
1				5					10					15	
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			35				40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50				55						60				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65					70					75				80	
Ala	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
				85					90					95	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			100					105					110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115					120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
	130					135					140				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145					150					155				160	
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
				165					170					175	

225	Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala	240
					245					250					255		
	Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys	
				260					265					270			
	Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln	
			275					280					285				
	Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	
		290				295						300					
	Ala	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala	
	305					310					315					320	
	Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala	
				325					330						335		
	Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro	
			340					345						350			
	Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	
		355					360					365					
	Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala	
		370				375						380					
	Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg	
	385					390					395					400	
	Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val	
				405					410						415		
	Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser	
			420					425						430			
	Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe	
			435					440					445				
	Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln	
		450				455						460					
	Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val	
	465					470					475					480	
	Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala	
				485					490						495		
	Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val	
			500					505						510			
	Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp	
		515					520						525				
	Arg	Leu	Ala	Arg	Gly	His	Ser	Leu									
		530					535										

<210> 540

<211> 312

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep40 59 305 GCG GCC

<400> 540

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys	
1				5				10						15		
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala	
			20				25						30			
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys	
		35				40						45				
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln	
	50				55					60						
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	
65					70				75						80	
Ala	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala	
			85				90						95			
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala	
		100					105						110			
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro	
		115				120						125				
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	
	130					135					140					

Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145					150					155					160
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
				165					170					175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			180					185					190		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
		195				200						205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
	210				215						220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225					230					235					240
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
				245				250						255	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			260					265					270		
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
		275					280					285			
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
	290					295					300				
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu								
305					310										

<210> 541

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 53 231 GCG GCC

<400> 541

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
1			5					10						15	
Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
		20						25				30			
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Ala	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
	50				55					60					
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
			85					90					95		
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
		100						105				110			
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
	115				120						125				
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130				135						140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155				160	
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
			165					170						175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
		180						185				190			
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
	195					200						205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210				215						220				
Met	Glu	Leu	Val	Gly	Trp	Ala	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			245					250						255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		260						265				270			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln

Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
290						295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
				340				345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
	370					375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
				420				425					430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
	450					455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
				485				490						495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
	530					535					540				
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
545					550					555					560
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
				565				570						575	
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
			580					585					590		
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		595					600					605			
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
	610					615					620				

<210> 542

<211> 397

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep52 53 231 GCG GCC

<400> 542

Met	Glu	Leu	Val	Gly	Trp	Ala	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
1				5					10					15	
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
		35					40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50					55				60					
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65					70					75				80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
				85					90					95	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			100					105					110		

Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115					120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		130				135					140				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145					150					155					160
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
				165					170					175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			180					185					190		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
		195					200					205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		210				215					220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225					230					235					240
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
				245					250					255	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			260					265					270		
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
		275					280					285			
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		290				295					300				
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
305					310					315					320
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
				325					330					335	
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			340					345					350		
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
		355					360					365			
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		370				375					380				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
385					390					395					

<210> 543

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 53 231 GCG GCC

<400> 543

Thr	Ala	Gly	Phe	Tyr	Glu	Ile	Val	Ile	Lys	Val	Pro	Ser	Asp	Leu	Asp
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Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Ala	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
		50				55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75				80	
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
		130					135				140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155				160	
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu

Ser	Ala	Cys	Leu	165	Asn	Leu	Thr	Glu	Arg	170	Lys	Arg	Leu	Val	Ala	175	Gln	His
Leu	Thr	His	Val	180	Ser	Gln	Thr	Gln	Glu	185	Gln	Asn	Lys	Glu	190	Asn	Gln	Asn
Pro	Asn	Ser	Asp	195	Ala	Pro	Val	Ile	Arg	200	Ser	Lys	Thr	Ser	Ala	Arg	Tyr	
Met	Glu	Leu	Val	210	Gly	Trp	Ala	Val	Asp	215	Lys	Gly	Ile	Thr	Ser	Glu	Lys	
225	Gln	Trp	Ile	225	Glu	Asp	Gln	Ala	Ser	230	Tyr	Ile	Ser	Phe	Asn	Ala	Ala	
				245	Ser	Gln	Ile	Lys	Ala	250	Ala	Leu	Asp	Asn	Ala	Gly	Lys	
				260	Ile	Met	Ser	Leu	Thr	265	Pro	Asp	Tyr	Leu	Val	Gly	Gln	
				275	Pro	Val	Glu	Asp	Ile	280	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	
				290	Asn	Gly	Tyr	Asp	Pro	295	Gln	Tyr	Ala	Ala	Ser	Val	Phe	
305	Thr	Lys	Lys	305	Phe	Gly	Lys	Arg	Asn	310	Thr	Ile	Trp	Leu	Phe	Gly	Pro	
				325	Thr	Thr	Gly	Lys	Thr	330	Asn	Ile	Ala	His	Thr	Val	Pro	
				340	Phe	Tyr	Gly	Cys	Val	345	Thr	Asn	Glu	Asn	Phe	Pro	Phe	
				355	Cys	Val	Asp	Lys	Met	360	Trp	Trp	Glu	Glu	Gly	Lys	Met	
				370	Lys	Val	Val	Glu	Ser	375	Ala	Lys	Ala	Ile	Leu	Gly	Gly	
385	Val	Asp	Gln	385	Lys	Cys	Lys	Ser	Ser	390	Ala	Gln	Ile	Asp	Pro	Thr	Pro	
				405	Ile	Val	Thr	Ser	Asn	410	Thr	Asn	Met	Cys	Ala	Val	Ile	
				420	Thr	Thr	Phe	Glu	His	425	Leu	Gln	Asp	Arg	Met	Phe	Lys	
				435	Glu	Leu	Thr	Arg	Arg	440	Leu	Asp	Phe	Gly	Lys	Val	Thr	
				450	Glu	Val	Lys	Asp	Phe	455	Phe	Arg	Trp	Ala	Lys	Asp	His	
465	Glu	His	Glu	465	Phe	Thr	Val	Lys	Lys	470	Gly	Gly	Ala	Lys	Lys	Arg	Pro	
				485	Pro	Ser	Asp	Ala	Asp	490	Ile	Ser	Glu	Pro	Lys	Arg	Val	
				500	Ala	Gln	Pro	Ser	Thr	505	Ser	Asp	Ala	Glu	Ala	Ser	Ile	
				515	Arg	Leu	Ala	Arg	Gly	520	His	Ser	Leu					
				530						535								

<210> 544
 <211> 312
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep40 53 231 GCG GCC

<400> 544
 Met Glu Leu Val Gly Trp Ala Val Asp Lys Gly Ile Thr Ser Glu Lys
 1 5 10 15
 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20 25 30
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50 55 60
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80


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Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
      85      90
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
      100      105      110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
      115      120      125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
      130      135      140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
      145      150      155      160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
      165      170      175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
      180      185      190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
      195      200      205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
      210      215      220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
      225      230      235      240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
      245      250      255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
      260      265      270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
      275      280      285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
      290      295      300
Arg Leu Ala Arg Gly His Ser Leu
      305      310

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<210> 545

<211> 621

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep78 258 498 GCC GCT

<400> 545

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Thr Ala Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
  1      5      10      15
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
      20      25      30
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
      35      40      45
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
      50      55      60
Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
      65      70      75      80
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
      85      90      95
Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
      100      105      110
Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu
      115      120      125
Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
      130      135      140
Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
      145      150      155      160
Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu
      165      170      175
Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His
      180      185      190
Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
      195      200      205
Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr

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210	215	220
Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys		
225	230	235
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala		
	245	250
Ser Ala Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys		
	260	265
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln		
	275	280
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu		
	290	295
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala		
305	310	315
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala		
	325	330
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro		
	340	345
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp		
	355	360
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala		
	370	375
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg		
385	390	395
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val		
	405	410
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser		
	420	425
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe		
	435	440
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln		
	450	455
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val		
465	470	475
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala		
	485	490
Pro Ala Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val		
	500	505
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp		
	515	520
Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu		
	530	535
Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys		
545	550	555
Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu		
	565	570
Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr		
	580	585
Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp		
	595	600
Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln		
610	615	620

<210> 546

<211> 397

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep proteinrep 52 258 498 GCC GCT

<400> 546

Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys	
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Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala	
	20
Ser Ala Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys	
	35
	40
	45

Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
50 55 60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
65 70 75 80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
85 90 95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
100 105 110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
115 120 125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
130 135 140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145 150 155 160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165 170 175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
180 185 190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
195 200 205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
210 215 220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
225 230 235 240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
245 250 255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
260 265 270
Pro Ala Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
275 280 285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
290 295 300
Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
305 310 315 320
Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
325 330 335
Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
340 345 350
Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
355 360 365
Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
370 375 380
Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
385 390 395

<210> 547

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 258 498 GCC GCT

<400> 547

Thr Ala Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
1 5 10 15
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
20 25 30
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
35 40 45
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
50 55 60
Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65 70 75 80
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
85 90 95
Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile

1002249.121701

Arg	Glu	Lys	100	Leu	Ile	Gln	Arg	Ile	105	Tyr	Arg	Gly	Ile	Glu	110	Pro	Thr	Leu
		115						120						125				
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly			
	130					135					140							
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys			
145				150						155					160			
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu			
			165						170					175				
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His			
		180						185						190				
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn			
	195						200					205						
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr			
	210					215					220							
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys			
225				230						235					240			
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala			
			245						250					255				
Ser	Ala	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys			
		260						265					270					
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln			
	275						280					285						
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu			
	290					295					300							
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala			
305				310					315						320			
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala			
			325						330					335				
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro			
		340						345					350					
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp			
	355						360					365						
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala			
	370					375					380							
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg			
385				390					395						400			
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val			
			405					410						415				
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser			
		420					425						430					
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe			
	435						440					445						
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln			
	450					455					460							
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val			
465				470					475					480				
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala			
			485					490						495				
Pro	Ala	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val			
		500					505						510					
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp			
	515						520					525						
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu											
	530					535												

<210> 548

<211> 312

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep40 258 498 GCC GCT

<400> 548

Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
1				5					10					15	

Gln	Trp	Ile 20	Glu	Asp	Gln	Ala	Ser 25	Tyr	Ile	Ser	Phe	Asn 30	Ala	Ala	
Ser	Ala	Ser 35	Arg	Ser	Gln	Ile	Lys 40	Ala	Leu	Asp	Asn 45	Ala	Gly	Lys	
Ile	Met 50	Ser	Leu	Thr	Lys 55	Thr	Ala	Pro	Asp	Tyr 60	Val	Gly	Gln	Gln	
Pro 65	Val	Glu	Asp	Ile	Ser 70	Ser	Asn	Arg	Ile	Tyr 75	Lys	Ile	Leu	Glu 80	
Asn	Gly	Tyr	Asp	Pro 85	Gln	Tyr	Ala	Ala	Ser 90	Val	Phe	Leu	Gly 95	Trp 100	
Thr	Lys	Lys	Phe 100	Gly	Lys	Arg	Asn	Thr 105	Ile	Trp	Leu	Phe	Gly 110	Pro	Ala
Thr	Thr	Gly 115	Lys	Thr	Asn	Ile	Ala 120	Glu	Ala	Ile	Ala	His 125	Thr	Val	Pro
Phe	Tyr 130	Gly	Cys	Val	Asn	Trp 135	Thr	Asn	Glu	Asn	Phe 140	Pro	Phe	Asn	Asp
Cys 145	Val	Asp	Lys	Met 150	Val	Ile	Trp	Trp	Glu	Glu 155	Gly	Lys	Met	Thr	Ala 160
Lys	Val	Val	Glu	Ser 165	Ala	Lys	Ala	Ile	Leu 170	Gly	Gly	Ser	Lys	Val 175	Arg
Val	Asp	Gln 180	Lys	Cys	Lys	Ser	Ser	Ala 185	Gln	Ile	Asp	Pro	Thr 190	Pro	Val
Ile	Val	Thr 195	Ser	Asn	Thr	Asn	Met 200	Cys	Ala	Val	Ile	Asp 205	Gly	Asn	Ser
Thr	Thr 210	Phe	Glu	His	Gln	Gln 215	Pro	Leu	Gln	Asp	Arg 220	Met	Phe	Lys	Phe
Glu 225	Leu	Thr	Arg	Arg	Leu 230	Asp	His	Asp	Phe	Gly 235	Lys	Val	Thr	Lys	Gln 240
Glu	Val	Lys	Asp	Phe 245	Phe	Arg	Trp	Ala	Lys 250	Asp	His	Val	Val	Glu 255	Val
Glu	His	Glu	Phe 260	Tyr	Val	Lys	Lys	Gly 265	Gly	Ala	Lys	Lys	Arg 270	Pro	Ala
Pro	Ala	Asp 275	Ala	Asp	Ile	Ser	Glu 280	Pro	Lys	Arg	Val	Arg 285	Glu	Ser	Val
Ala	Gln 290	Pro	Ser	Thr	Ser	Asp 295	Ala	Glu	Ala	Ser	Ile 300	Asn	Tyr	Ala	Asp
Arg 305	Leu	Ala	Arg	Gly	His 310	Ser	Leu								

<213> Artificial Sequence

<223> Mutant rep protein: rep78 88 231 GCC GCC

Thr 1	Ala	Gly	Phe	Tyr 5	Glut 10	Ile	Val	Ile	Lys 15	Val	Pro	Ser	Asp	Leu 20	Asp
Glu	His	Leu	Pro 25	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asn	Trp	Val	Ala	Glu
Lys	Glu	Trp 30	Glu	Leu	Pro	Pro	Asp 35	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
Glu	Gln	Ala	Pro	Leu	Thr	Val 40	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
Thr 45	Glu	Trp	Arg	Arg	Val 50	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
Gln	Phe	Glu	Lys 55	Gly	Glu	Ser	Ala	Phe	His 60	Met	His	Val	Leu	Val	Glu
Thr	Thr	Gly	Val 65	Lys	Ser	Met	Val	Leu 70	Gly	Arg	Phe	Leu	Ser	Gln	Ile
Arg	Glu	Lys	Leu 75	Ile	Gln	Arg	Ile	Tyr 80	Arg	Gly	Ile	Glu	Pro	Thr	Leu
Pro	Asn	Trp	Phe 85	Ala	Val	Thr	Lys 90	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
Asn	Lys	Val	Val 95	Asp	Glu	Cys	Tyr 100	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys

145	Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165	150					170	155				175	160
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His	
			180					185						190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn	
			195				200					205				
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr	
	210					215					220					
Met	Glu	Leu	Val	Gly	Trp	Ala	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys	
225					230					235					240	
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala	
				245					250					255		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys	
			260					265					270			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln	
			275				280					285				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu	
	290					295					300					
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala	
305					310					315					320	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala	
				325					330					335		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro	
			340					345					350			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp	
		355					360					365				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala	
	370					375					380					
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg	
385					390					395					400	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val	
				405					410					415		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser	
			420					425					430			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe	
		435					440					445				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln	
						455					460					
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val	
465					470					475					480	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala	
				485					490					495		
Pro	Ser	Asp	Ala													

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<210> 550
<211> 397
<212> PRT
<213> Artificial Sequence
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<400> 550
Met Glu Leu Val Gly Trp Ala Val Asp Lys Gly Ile Thr Ser Glu Lys
 1      5      10      15
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20      25      30
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35      40      45
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50      55      60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65      70      75      80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85      90      95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
100      105      110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
115      120      125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
130      135      140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145      150      155      160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165      170      175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
180      185      190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
195      200      205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
210      215      220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
225      230      235      240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
245      250      255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
260      265      270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
275      280      285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
290      295      300
Arg Tyr Gln Asn Lys Cys Ser Arg His Val Gly Met Asn Leu Met Leu
305      310      315      320
Phe Pro Cys Arg Gln Cys Glu Arg Met Asn Gln Asn Ser Asn Ile Cys
325      330      335
Phe Thr His Gly Gln Lys Asp Cys Leu Glu Cys Phe Pro Val Ser Glu
340      345      350
Ser Gln Pro Val Ser Val Val Lys Lys Ala Tyr Gln Lys Leu Cys Tyr
355      360      365
Ile His His Ile Met Gly Lys Val Pro Asp Ala Cys Thr Ala Cys Asp
370      375      380
Leu Val Asn Val Asp Leu Asp Asp Cys Ile Phe Glu Gln
385      390      395

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<210> 551
<211> 536
<212> PRT
<213> Artificial Sequence

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<220>
<223> Mutant rep protein: rep68 88 231 GCC GCC

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Thr Ala Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
 1      5      10      15
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
 20      25      30
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
 35      40      45

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1002249-121707

Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
50						55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Ala	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Phe	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
		130				135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
		210				215					220				
Met	Glu	Leu	Val	Gly	Trp	Ala	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260				265						270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
		290				295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
			340					345					350		
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
		355					360					365			
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
		370				375					380				
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
385					390					395					400
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
				405					410					415	
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
			420				425						430		
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
		435					440					445			
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
		450				455					460				
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
465					470					475					480
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			485						490					495	
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
			500					505					510		
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520						525		
Arg	Leu	Ala	Arg	Gly	His	Ser	Leu								
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<210> 552

<211> 312

<212> PRT

<213> Artificial Sequence

<220>
<223> Mutant rep protein: rep40 88 231 GCC GCC

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Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
20 25 30
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
35 40 45
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
50 55 60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
65 70 75 80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
85 90 95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
100 105 110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
115 120 125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
130 135 140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145 150 155 160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165 170 175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
180 185 190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
195 200 205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
210 215 220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
225 230 235 240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
245 250 255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
260 265 270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
275 280 285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
290 295 300
Arg Leu Ala Arg Gly His Ser Leu
305 310

<210> 553
<211> 621
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant rep protein: rep78 101 363 GCA GCC

<400> 553
Thr Ala Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
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Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
20 25 30
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
35 40 45
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
50 55 60
Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65 70 75 80
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
85 90 95
Thr Thr Gly Val Ala Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile

1002249 "101701

Arg	Glu	Lys	100	Leu	Ile	Gln	Arg	Ile	105	Tyr	Arg	Gly	Ile	Glu	110	Pro	Thr	Leu
Pro	Asn	Trp	115	Phe	Ala	Val	Thr	Lys	120	Thr	Arg	Asn	Gly	125	Ala	Gly	Gly	Gly
Asn	Lys	Val	130	Val	Asp	Glu	Cys	Tyr	135	Ile	Pro	Asn	Tyr	140	Leu	Leu	Pro	Lys
Thr	Gln	Pro	145	Glu	Leu	Gln	Trp	Ala	150	Trp	Thr	Asn	Met	155	Glu	Gln	Tyr	Leu
Ser	Ala	Cys	165	Leu	Asn	Leu	Thr	Glu	170	Arg	Lys	Arg	Leu	175	Val	Ala	Gln	His
Leu	Thr	His	180	Val	Ser	Gln	Thr	Gln	185	Glu	Gln	Asn	Lys	190	Glu	Asn	Gln	Asn
Pro	Asn	Ser	195	Asp	Ala	Pro	Val	Ile	200	Arg	Ser	Lys	Thr	205	Ser	Ala	Arg	Tyr
Met	Glu	Leu	210	Val	Gly	Trp	Leu	Val	215	Asp	Lys	Gly	Ile	220	Thr	Ser	Glu	Lys
Gln	Trp	Ile	225	Gln	Glu	Asp	Gln	Ala	230	Ser	Tyr	Ile	Ser	235	Phe	Asn	Ala	Ala
Ser	Asn	Ser	245	Arg	Ser	Gln	Ile	Lys	250	Ala	Ala	Leu	Asp	255	Asn	Ala	Gly	Lys
Ile	Met	Ser	260	Leu	Thr	Lys	Thr	Ala	265	Pro	Asp	Tyr	Leu	270	Val	Gly	Gln	Gln
Pro	Val	Glu	275	Asp	Ile	Ser	Ser	Asn	280	Arg	Ile	Tyr	Lys	285	Ile	Leu	Glu	Leu
Asn	Gly	Tyr	290	Asp	Pro	Gln	Tyr	Ala	295	Ala	Ser	Val	Phe	300	Leu	Gly	Trp	Ala
Thr	Lys	Lys	305	Phe	Gly	Lys	Arg	Asn	310	Thr	Ile	Trp	Leu	315	Phe	Gly	Pro	Ala
Thr	Thr	Gly	325	Lys	Thr	Asn	Ile	Ala	330	Glu	Ala	Ile	Ala	335	His	Thr	Val	Pro
Phe	Tyr	Gly	340	Cys	Val	Asn	Trp	Thr	345	Asn	Glu	Ala	Phe	350	Pro	Phe	Asn	Asp
Cys	Val	Asp	355	Lys	Met	Val	Ile	Trp	360	Trp	Glu	Glu	Gly	365	Lys	Met	Thr	Ala
Lys	Val	Val	370	Glu	Ser	Ala	Lys	Ala	375	Ile	Leu	Gly	Gly	380	Ser	Lys	Val	Arg
Val	Asp	Gln	385	Lys	Cys	Lys	Ser	Ser	390	Ala	Gln	Ile	Asp	395	Pro	Thr	Pro	Val
Ile	Val	Thr	405	Ser	Asn	Thr	Asn	Met	410	Cys	Ala	Val	Ile	415	Asp	Gly	Asn	Ser
Thr	Thr	Phe	420	Glu	His	Gln	Gln	Pro	425	Leu	Gln	Asp	Arg	430	Met	Phe	Lys	Phe
Glu	Leu	Thr	435	Arg	Arg	Leu	Asp	His	440	Asp	Phe	Gly	Lys	445	Val	Thr	Lys	Gln
Glu	Val	Lys	450	Asp	Phe	Phe	Arg	Trp	455	Ala	Lys	Asp	His	460	Val	Val	Glu	Val
Glu	His	Glu	465	Phe	Tyr	Val	Lys	Lys	470	Gly	Gly	Ala	Lys	475	Lys	Lys	Arg	Pro
Pro	Ser	Asp	485	Ala	Asp	Ile	Ser	Glu	490	Pro	Lys	Arg	Val	495	Arg	Glu	Ser	Val
Ala	Gln	Pro	500	Ser	Thr	Ser	Asp	Ala	505	Glu	Ala	Ser	Ile	510	Asn	Tyr	Ala	Asp
Arg	Tyr	Gln	515	Asn	Lys	Cys	Ser	Arg	520	His	Val	Gly	Met	525	Asn	Leu	Met	Leu
Phe	Pro	Cys	530	Arg	Gln	Cys	Glu	Arg	535	Met	Asn	Gln	Asn	540	Ser	Asn	Ile	Cys
Phe	Thr	His	545	Gly	Gln	Lys	Asp	Cys	550	Leu	Glu	Cys	Phe	555	Pro	Val	Ser	Glu
Ser	Gln	Pro	565	Val	Ser	Val	Val	Lys	570	Lys	Ala	Tyr	Gln	575	Lys	Leu	Cys	Tyr
Ile	His	His	580	Ile	Met	Gly	Lys	Val	585	Pro	Asp	Ala	Cys	590	Thr	Ala	Cys	Asp
Leu	Val	Asn	595	Val	Asp	Leu	Asp	600	605	Cys	Ile	Phe	Glu	610	Gln			
			610				615							620				

<210> 554

<211> 397
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Mutant rep protein: rep52 101 363 GCA GCC

<400> 554

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Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
			20					25					30		
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
	35						40					45			
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
	50					55					60				
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
65					70					75				80	
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
				85					90					95	
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
			100					105					110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115					120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Ala	Phe	Pro	Phe	Asn	Asp
	130					135					140				
Cys	Val	Asp	Lys	Met	Val	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Ala
145					150					155				160	
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
				165					170					175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Ala	Gln	Ile	Asp	Pro	Thr	Pro	Val
			180					185					190		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Ala	Val	Ile	Asp	Gly	Asn	Ser
	195					200						205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Gln	Asp	Arg	Met	Phe	Lys	Phe
	210					215					220				
Glu	Leu	Thr	Arg	Arg	Leu	Asp	His	Asp	Phe	Gly	Lys	Val	Thr	Lys	Gln
225					230					235				240	
Glu	Val	Lys	Asp	Phe	Phe	Arg	Trp	Ala	Lys	Asp	His	Val	Val	Glu	Val
				245					250					255	
Glu	His	Glu	Phe	Tyr	Val	Lys	Lys	Gly	Gly	Ala	Lys	Lys	Arg	Pro	Ala
			260					265					270		
Pro	Ser	Asp	Ala	Asp	Ile	Ser	Glu	Pro	Lys	Arg	Val	Arg	Glu	Ser	Val
	275					280						285			
Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
	290					295					300				
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
305					310					315				320	
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
				325					330					335	
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
			340					345					350		
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
	355					360						365			
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
	370					375					380				
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
385					390						395				

<210> 555

<211> 536

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant rep protein: rep68 101 363 GCA GCC

1002249.121701

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 20      25      30
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
 35      40      45
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
 50      55      60
Thr Glu Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
 65      70      75      80
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Met His Val Leu Val Glu
 85      90      95
Thr Thr Gly Val Ala Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
100      105      110
Arg Glu Lys Leu Ile Gln Arg Ile Tyr Arg Gly Ile Glu Pro Thr Leu
115      120      125
Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
130      135      140
Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
145      150      155      160
Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Gln Tyr Leu
165      170      175
Ser Ala Cys Leu Asn Leu Thr Glu Arg Lys Arg Leu Val Ala Gln His
180      185      190
Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Gln Asn
195      200      205
Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
210      215      220
Met Glu Leu Val Gly Trp Leu Val Asp Lys Gly Ile Thr Ser Glu Lys
225      230      235      240
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
245      250      255
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
260      265      270
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
275      280      285
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
290      295      300
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
305      310      315      320
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
325      330      335
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
340      345      350
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Ala Phe Pro Phe Asn Asp
355      360      365
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
370      375      380
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
385      390      395      400
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
405      410      415
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
420      425      430
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
435      440      445
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
450      455      460
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
465      470      475      480
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
485      490      495
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
500      505      510
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
515      520      525

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Arg Leu Ala Arg Gly His Ser Leu
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<210> 556
<211> 312
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant rep protein: rep40 101 363 GCA GCC

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Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
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Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
35 40 45
Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
50 55 60
Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
65 70 75 80
Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
85 90 95
Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
100 105 110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
115 120 125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Ala Phe Pro Phe Asn Asp
130 135 140
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145 150 155 160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165 170 175
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
180 185 190
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
195 200 205
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
210 215 220
Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
225 230 235 240
Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
245 250 255
Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
260 265 270
Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
275 280 285
Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
290 295 300
Arg Leu Ala Arg Gly His Ser Leu
305 310

<210> 557
<211> 621
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant rep protein: rep78 354 132 GCC GCC

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Thr Ala Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
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Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asn Trp Val Ala Glu
20 25 30
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile

[illegible]

Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 465 470 475 480
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 485 490 495
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 500 505 510
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
 515 520 525
 Arg Leu Ala Arg Gly His Ser Leu
 530 535

<210> 560
 <211> 312
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep40 354 132 GCC GCC

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 Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
 20 25 30
 Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
 35 40 45
 Ile Met Ser Leu Thr Lys Thr Ala Pro Asp Tyr Leu Val Gly Gln Gln
 50 55 60
 Pro Val Glu Asp Ile Ser Ser Asn Arg Ile Tyr Lys Ile Leu Glu Leu
 65 70 75 80
 Asn Gly Tyr Asp Pro Gln Tyr Ala Ala Ser Val Phe Leu Gly Trp Ala
 85 90 95
 Thr Lys Lys Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
 100 105 110
 Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
 115 120 125
 Phe Ala Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
 130 135 140
 Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
 145 150 155 160
 Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
 165 170 175
 Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
 180 185 190
 Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
 195 200 205
 Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
 210 215 220
 Glu Leu Thr Arg Arg Leu Asp His Asp Phe Gly Lys Val Thr Lys Gln
 225 230 235 240
 Glu Val Lys Asp Phe Phe Arg Trp Ala Lys Asp His Val Val Glu Val
 245 250 255
 Glu His Glu Phe Tyr Val Lys Lys Gly Gly Ala Lys Lys Arg Pro Ala
 260 265 270
 Pro Ser Asp Ala Asp Ile Ser Glu Pro Lys Arg Val Arg Glu Ser Val
 275 280 285
 Ala Gln Pro Ser Thr Ser Asp Ala Glu Ala Ser Ile Asn Tyr Ala Asp
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 Arg Leu Ala Arg Gly His Ser Leu
 305 310

<210> 561
 <211> 621
 <212> PRT
 <213> Artificial Sequence

<220>

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Glu 17	His 18	Leu 19	Pro 20	Gly 21	Ile 22	Ser 23	Asp 24	Ser 25	Phe 26	Val 27	Asn 28	Trp 29	Val 30	Ala 31	Glu 32
Lys 33	Glu 34	Trp 35	Glu 36	Leu 37	Pro 38	Pro 39	Asp 40	Ser 41	Asp 42	Met 43	Asp 44	Leu 45	Asn 46	Leu 47	Ile 48
Glu 49	Gln 50	Ala 51	Pro 52	Leu 53	Thr 54	Val 55	Ala 56	Glu 57	Lys 58	Leu 59	Gln 60	Arg 61	Asp 62	Phe 63	Leu 64
Thr 65	Glu 66	Trp 67	Arg 68	Arg 69	Val 70	Ser 71	Lys 72	Ala 73	Pro 74	Glu 75	Ala 76	Leu 77	Phe 78	Phe 79	Val 80
Gln 81	Phe 82	Glu 83	Lys 84	Gly 85	Glu 86	Ser 87	Tyr 88	Phe 89	His 90	Met 91	His 92	Val 93	Leu 94	Val 95	Glu 96
Thr 97	Thr 98	Gly 99	Val 100	Lys 101	Ser 102	Met 103	Val 104	Leu 105	Gly 106	Arg 107	Phe 108	Leu 109	Ser 110	Gln 111	Ile 112
Arg 113	Glu 114	Lys 115	Leu 116	Ile 117	Gln 118	Arg 119	Ile 120	Tyr 121	Arg 122	Gly 123	Ile 124	Glu 125	Pro 126	Thr 127	Leu 128
Pro 129	Asn 130	Trp 131	Ala 132	Ala 133	Val 134	Thr 135	Lys 136	Thr 137	Arg 138	Asn 139	Gly 140	Ala 141	Gly 142	Gly 143	Gly 144
Asn 145	Lys 146	Val 147	Val 148	Asp 149	Glu 150	Cys 151	Tyr 152	Ile 153	Pro 154	Asn 155	Tyr 156	Leu 157	Leu 158	Pro 159	Lys 160
Thr 161	Gln 162	Pro 163	Glu 164	Leu 165	Gln 166	Trp 167	Ala 168	Trp 169	Thr 170	Asn 171	Met 172	Glu 173	Gln 174	Tyr 175	Leu 176
Ser 177	Ala 178	Cys 179	Leu 180	Asn 181	Leu 182	Thr 183	Glu 184	Arg 185	Lys 186	Arg 187	Leu 188	Val 189	Ala 190	Gln 191	His 192
Leu 193	Thr 194	His 195	Val 196	Ser 197	Gln 198	Thr 199	Gln 200	Glu 201	Gln 202	Asn 203	Lys 204	Glu 205	Asn 206	Gln 207	Asn 208
Pro 209	Asn 210	Ser 211	Asp 212	Ala 213	Pro 214	Val 215	Ile 216	Arg 217	Ser 218	Lys 219	Thr 220	Ser 221	Ala 222	Arg 223	Tyr 224
Met 225	Glu 226	Leu 227	Val 228	Gly 229	Trp 230	Leu 231	Val 232	Asp 233	Lys 234	Gly 235	Ile 236	Thr 237	Ser 238	Glu 239	Lys 240
Gln 241	Trp 242	Ile 243	Gln 244	Glu 245	Asp 246	Gln 247	Ala 248	Ser 249	Tyr 250	Ile 251	Ser 252	Phe 253	Asn 254	Ala 255	Ala 256
Ser 257	Asn 258	Ser 259	Arg 260	Ser 261	Gln 262	Ile 263	Lys 264	Ala 265	Ala 266	Leu 267	Asp 268	Asn 269	Ala 270	Gly 271	Lys 272
Ile 273	Met 274	Ser 275	Leu 276	Thr 277	Lys 278	Thr 279	Ala 280	Pro 281	Asp 282	Tyr 283	Leu 284	Val 285	Gly 286	Gln 287	Gln 288
Pro 289	Val 290	Glu 291	Asp 292	Ile 293	Ser 294	Ser 295	Asn 296	Arg 297	Ile 298	Tyr 299	Lys 300	Ile 301	Leu 302	Glu 303	Leu 304
Asn 305	Gly 306	Tyr 307	Asp 308	Pro 309	Gln 310	Tyr 311	Ala 312	Ala 313	Ser 314	Val 315	Phe 316	Leu 317	Gly 318	Trp 319	Ala 320
Thr 321	Lys 322	Lys 323	Phe 324	Gly 325	Lys 326	Arg 327	Asn 328	Thr 329	Ile 330	Trp 331	Leu 332	Phe 333	Gly 334	Pro 335	Ala 336
Thr 337	Thr 338	Gly 339	Lys 340	Thr 341	Asn 342	Ile 343	Ala 344	Glu 345	Ala 346	Ile 347	Ala 348	His 349	Thr 350	Val 351	Pro 352
Phe 353	Tyr 354	Gly 355	Cys 356	Val 357	Asn 358	Trp 359	Thr 360	Asn 361	Glu 362	Asn 363	Phe 364				

Ala	Gln	Pro	Ser	Thr	Ser	Asp	Ala	Glu	Ala	Ser	Ile	Asn	Tyr	Ala	Asp
		515					520					525			
Arg	Tyr	Gln	Asn	Lys	Cys	Ser	Arg	His	Val	Gly	Met	Asn	Leu	Met	Leu
	530					535					540				
Phe	Pro	Cys	Arg	Gln	Cys	Glu	Arg	Met	Asn	Gln	Asn	Ser	Asn	Ile	Cys
545					550					555					560
Phe	Thr	His	Gly	Gln	Lys	Asp	Cys	Leu	Glu	Cys	Phe	Pro	Val	Ser	Glu
				565					570					575	
Ser	Gln	Pro	Val	Ser	Val	Val	Lys	Lys	Ala	Tyr	Gln	Lys	Leu	Cys	Tyr
		580						585					590		
Ile	His	His	Ile	Met	Gly	Lys	Val	Pro	Asp	Ala	Cys	Thr	Ala	Cys	Asp
		595					600					605			
Leu	Val	Asn	Val	Asp	Leu	Asp	Asp	Cys	Ile	Phe	Glu	Gln			
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<210> 562
 <211> 536
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant rep protein: rep68 10 132 GCG GCC

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			20					25					30		
Lys	Glu	Trp	Glu	Leu	Pro	Pro	Asp	Ser	Asp	Met	Asp	Leu	Asn	Leu	Ile
		35					40					45			
Glu	Gln	Ala	Pro	Leu	Thr	Val	Ala	Glu	Lys	Leu	Gln	Arg	Asp	Phe	Leu
		50				55					60				
Thr	Glu	Trp	Arg	Arg	Val	Ser	Lys	Ala	Pro	Glu	Ala	Leu	Phe	Phe	Val
65					70					75					80
Gln	Phe	Glu	Lys	Gly	Glu	Ser	Tyr	Phe	His	Met	His	Val	Leu	Val	Glu
				85					90					95	
Thr	Thr	Gly	Val	Lys	Ser	Met	Val	Leu	Gly	Arg	Phe	Leu	Ser	Gln	Ile
			100					105					110		
Arg	Glu	Lys	Leu	Ile	Gln	Arg	Ile	Tyr	Arg	Gly	Ile	Glu	Pro	Thr	Leu
		115					120					125			
Pro	Asn	Trp	Ala	Ala	Val	Thr	Lys	Thr	Arg	Asn	Gly	Ala	Gly	Gly	Gly
	130					135					140				
Asn	Lys	Val	Val	Asp	Glu	Cys	Tyr	Ile	Pro	Asn	Tyr	Leu	Leu	Pro	Lys
145					150					155					160
Thr	Gln	Pro	Glu	Leu	Gln	Trp	Ala	Trp	Thr	Asn	Met	Glu	Gln	Tyr	Leu
				165					170					175	
Ser	Ala	Cys	Leu	Asn	Leu	Thr	Glu	Arg	Lys	Arg	Leu	Val	Ala	Gln	His
			180					185					190		
Leu	Thr	His	Val	Ser	Gln	Thr	Gln	Glu	Gln	Asn	Lys	Glu	Asn	Gln	Asn
		195					200					205			
Pro	Asn	Ser	Asp	Ala	Pro	Val	Ile	Arg	Ser	Lys	Thr	Ser	Ala	Arg	Tyr
	210					215					220				
Met	Glu	Leu	Val	Gly	Trp	Leu	Val	Asp	Lys	Gly	Ile	Thr	Ser	Glu	Lys
225					230					235					240
Gln	Trp	Ile	Gln	Glu	Asp	Gln	Ala	Ser	Tyr	Ile	Ser	Phe	Asn	Ala	Ala
				245					250					255	
Ser	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Gly	Lys
			260					265					270		
Ile	Met	Ser	Leu	Thr	Lys	Thr	Ala	Pro	Asp	Tyr	Leu	Val	Gly	Gln	Gln
		275					280					285			
Pro	Val	Glu	Asp	Ile	Ser	Ser	Asn	Arg	Ile	Tyr	Lys	Ile	Leu	Glu	Leu
	290					295					300				
Asn	Gly	Tyr	Asp	Pro	Gln	Tyr	Ala	Ala	Ser	Val	Phe	Leu	Gly	Trp	Ala
305					310					315					320
Thr	Lys	Lys	Phe	Gly	Lys	Arg	Asn	Thr	Ile	Trp	Leu	Phe	Gly	Pro	Ala
				325					330					335	
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro

cactctctct ga

1932

<210> 564

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 10 GCG

<400> 564

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgcggtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttcac	atgcacgtgc	tcgtggaaac	caccggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gtccccaaa	480
acccagcctg	agctccagt	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
aatctcacgg	agcgtaaacg	gttgggtggc	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcg	780
tcccaaatca	aggctgcctt	ggacaatg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tggtgggcca	gcagcccg	gaggacattt	ccagcaatcg	gatttataaa	900
attttggaac	taaacgggt	cgatcccaa	tatgcggctt	ccgtctttct	gggatggg	960
acgaaaaagt	tcggcaagag	gaacaccatc	tggtctgttt	ggcctgcaac	taccgggaag	1020
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gtggaccaga	aatgcaagtc	ctcggcccag	atagaccgga	ctcccgtgat	cgtcacctcc	1260
aacaccaaca	tgtgcgccgt	gattgacggg	aactcaacga	ccttcgaaca	ccagcagccg	1320
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gtcaccaagc	aggaagtcaa	agacttttct	cggtgggcaa	aggatcacgt	ggttgaggtg	1440
gagcatgaat	tctacgtcaa	aaagggtgga	gccaagaaaa	gacccgcccc	cagtgcgcga	1500
gatataagt	agcccaaacg	ggtgcgcgag	tcagttgcgc	agccatcgac	gtcagacgcg	1560
gaagcttcga	tcaactacgc	agacaggtac	caaaacaaat	gttctcgatc	cgtgggcatg	1620
aatctgatcg	tgttccctg	cagacaatgc	tgagagaatga	atcagaattc	aaatatctgc	1680
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tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggtgatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatgggtat	cttccagatt	ggctcgagga	1920
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<210> 565

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 20 GCC

<400> 565

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cgcgactttc	tgacggaatg	gcgcggtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttcac	atgcacgtgc	tcgtggaaac	caccggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gtccccaaa	480
acccagcctg	agctccagt	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
aatctcacgg	agcgtaaacg	gttgggtggc	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcg	780

tcccaaatca	aggtgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
atthttggaac	taaacgggta	cgatcccca	tatgcggctt	ccgtctttct	gggatgggcc	960
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 566

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 22 GCT

<400> 566

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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 567

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 29 GCG

<400> 567

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcg	tcacaaagac	cagaaatggc	420
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ccagacgctt	gcactgcctg	cgatctggtc	aatgtggatt	tggtgactg	catctttgaa	1860
caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 568

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 38 GCG

<400> 568

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aaatccatgg	ttttgggacg	tttctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcg	tcacaaagac	cagaaatggc	420
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
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<210> 569

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 39 GCA

<400> 569

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
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<210> 570

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 53 GCT


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tctgacatgg atctgaatct gattgagcag gcacccgcta ccgtggccga gaagctgcag      180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg      240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg      300
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<210> 571

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 59 GCG

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gtggaccaga aatgcaagtc ctcgcccag atagaccoga ctcccgtgat cgtcacctcc     1260
aacaccaaca tgtgcgccgt gattgacggg aactcaacga ccttcgaaca ccagcagccg     1320
ttgcaagacc ggatgttcaa atthgaactc acccgccgtc tggatcatga ctttgggaag     1380

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ttcactcacg	gacagaaaga	ctgttttagag	tgctttcccg	tgtcagaatc	tcaaccggtt	1740
tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 575
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 88 GCC

<400> 575						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	cgccttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgctg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
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aatctcacgg	agcgtaaacg	ggtgggtggc	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaagg	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcgg	780
tcccaaatca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tggtggggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
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gatataagtg	agcccaaacg	ggtgcgcgag	tcagttgcgc	agccatcgac	gtcagacgcg	1560
gaagcttcga	tcaactacgc	agacaggtac	caaaacaaat	gttctcgtca	cgtgggcatg	1620
aatctgatgc	tgthttccctg	cagacaatgc	gagagaatga	atcagaattc	aaatatctgc	1680
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tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 576
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 101 GCA

<400> 576						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
gcattccatgg	ttttgggacg	tttctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgctg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
accagcctg	agctccagt	ggcgtggact	aatatggaac	agtattttaag	cgctgtttg	540

aatctcacgg	agcgtaaacg	gttggtggcg	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaaact	660
tcagccagggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcgg	780
tcccaaataca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
attttggaa	taaacgggta	cgatcccca	tatgcggctt	ccgtctttct	gggatgggcc	960
acgaaaaagt	tcggcaagag	gaacaccatc	tggctgtttg	ggcctgcaac	taccgggaag	1020
accaacatcg	cggaggccat	agcccacact	gtgcccttct	acgggtgcgt	aaactggacc	1080
aatgagaact	ttcccttcaa	cgactgtgtc	gacaagatgg	tgatctggtg	ggaggagggg	1140
aagatgaccg	ccaaggtcgt	ggagtccggc	aaagccattc	tcggaggaag	caaggtgcgc	1200
gtggaccaga	aatgcaagtc	ctcggcccag	atagaccgga	ctcccgtgat	cgtcacctcc	1260
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gatataagtg	agcccaaacg	gggtgcgcgag	tcagttgcgc	agccatcgac	gtcagacgcg	1560
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tctgtcgtca	aaaaggcgta	tcagaaactg	tgctattctc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 577

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 124 GCC

<400> 577

acggcggggt	tttacgagat	tgtgattaag	gtccccagcg	accttgacga	gcatctgccc	60
ggcattttctg	acagctttgt	gaactgggtg	gccgagaagg	aatgggagtt	gccgccagat	120
tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	aggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcgggg	ccgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	gggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
accagcctg	agctccagtg	ggcgtggact	aatatggaa	agtatttaag	cgctgtttg	540
aatctcacgg	agcgtaaacg	gttggtggcg	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaaact	660
tcagccagggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcgg	780
tcccaaataca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
atlttggaa	taaacgggta	cgatcccca	tatgcggctt	ccgtctttct	gggatgggcc	960
acgaaaaagt	tcggcaagag	gaacaccatc	tggctgtttg	ggcctgcaac	taccgggaag	1020
accaacatcg	cggaggccat	agcccacact	gtgcccttct	acgggtgcgt	aaactggacc	1080
aatgagaact	ttcccttcaa	cgactgtgtc	gacaagatgg	tgatctggtg	ggaggagggg	1140
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gatataagtg	agcccaaacg	gggtgcgcgag	tcagttgcgc	agccatcgac	gtcagacgcg	1560
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ttcactcacg	gacagaaaga	ctgttttagag	tgctttcccg	tgtcagaatc	tcaaccgcgt	1740
tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 578
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 125 GCG

<400> 578
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ggcatttctg acagctttgt gaactgggtg gccgagaagg aatgggagtt gccgccagat 120
tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tcgcgccgac tttgccaaac tggttcgcgg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
accagcctg agtccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctcgagaag 720
cagtggatcc aggaggacca ggcctcatac atctccttca atgcggcctc caactcgcg 780
tcccaaatca aggtgcctt ggacaatgcg ggaaagatta tgagcctgac taaaaccgcc 840
cccgactacc tgggtgggcca gcagcccgtg gaggacattt ccagcaatcg gatattataa 900
atthttggaac taaacgggta cgatcccaaa tatgcggctt ccgtctttct gggatgggccc 960
acgaaaaagt tcggcaagag gaacaccatc tggctgtttg ggctgcaac tacgggaag 1020
accaacatcg cggaggccat gccacact gtgccttctt acgggtgctt aaactggacc 1080
aatgagaact ttcccttcaa cgactgtgtc gacaagatgg tgatctggtg ggaggagggg 1140
aagatgaccg ccaaggctcg ggagtcggcc aaagccattc tcggagggaag caaggtgcgc 1200
gtggaccaga aatgcaagtc ctgcggcccag atagaccgga ctcccgatgat cgtcacctcc 1260
aacaccaaca tgtgcgcgtg gattgacggg aactcaacga cttcgaaca ccagcagccg 1320
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gtcaccaagc aggaagtcaa agactttttc cgggtgggcaa aggatcacgt ggttgagggtg 1440
gagcatgaat tctacgtcaa aaagggtgga gccaaagaaa gaccgcgcc cagtgcagca 1500
gatataagtg agcccaaacg ggtgcgcgag tcagttgcgc agccatcgac gtcagacgcg 1560
gaagcttcga tcaactacgc agacaggtac caaaacaaat gttctcgtca cgtgggcatg 1620
aatctgatgc tgtttccctg cagacaatgc gagagaatga atcagaattc aaatatctgc 1680
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tctgtcgtca aaaaggcgta tcagaaactg tgctacattc atcatatcat gggaaagggtg 1800
ccagacgctg gcaactgctg cgactgtggt aatgtggatt tggatgactg catctttgaa 1860
caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
cactctctct ga 1932

<210> 579
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 127 GCT

<400> 579
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ggcatttctg acagctttgt gaactgggtg gccgagaagg aatgggagtt gccgccagat 120
tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tcgagccggc tttgccaaac tggttcgcgg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
accagcctg agtccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctcgagaag 720
cagtggatcc aggaggacca ggcctcatac atctccttca atgcggcctc caactcgcg 780
tcccaaatca aggtgcctt ggacaatgcg ggaaagatta tgagcctgac taaaaccgcc 840
cccgactacc tgggtgggcca gcagcccgtg gaggacattt ccagcaatcg gatattataa 900

<220>
 <223> Mutant rep DNA sequence: 140 GCC

<400> 581
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 ggcattttctg acagctttgt gaactgggtg gccgagaagg aatgggagtt gccgccagat 120
 tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
 cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
 caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccgggggtg 300
 aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
 taccgcggga tcgagccgac tttgccaaac tggttcgcgg tcacaaagac cagaaatgcc 420
 gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
 acccagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg 540
 aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
 gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaaact 660
 tcagccagggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctcggaagag 720
 cagtggatcc aggaggacca ggcctcatac atctccttca atgcggcctc caactcgcgg 780
 tcccaaatca aggctgcctt ggacaatgcg ggaaagatta tgagcctgac taaaaccgcc 840
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 aagatgaccg ccaagggtcg ggagtcggcc aaagccattc tcggaggaag caaggtgcgc 1200
 gtggaccaga aatgcaagtc ctcgggccag atagaccga aactcaacga ccttcgaaca ccagcagccg 1320
 aacaccaaca tgtgcgcgtg gattgacggg aactcaacga ccttcgaaca ccagcagccg 1380
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 gtcaccaagc aggaagtcaa agacttttct cgggtgggcaa aggatcacgt ggttgagggtg 1500
 gagcatgaat tctacgtcaa aaagggtgga gccaaagaaa gaccgcgccc cagtgcgcga 1560
 gatataagtg agcccaaacg ggtgcgcgag tcagttgcgc agccatcgac gtgcagcgcg 1620
 gaagcttcga tcaactacgc agacaggtac caaaacaaat gttctcgtca cgtgggcatg 1680
 aatctgatgc tgtttccctg cagacaatgc gagagaatga atcagaattc aaatatctgc 1740
 ttcactcacg gacagaaaga ctgttttagag tgctttcccg tgcagaatc tcaaccctgt 1800
 tctgtcgtca aaaaggcgta tcagaaactg tgctacattc atcatatcat gggaaagggtg 1860
 ccagacgctt gcaactgctg cgatctgggt aatgtggatt tggatgactg catctttgaa 1920
 caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1932
 cactctctct ga

<210> 582
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 161 GCC

<400> 582
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 ggcattttctg acagctttgt gaactgggtg gccgagaagg aatgggagtt gccgccagat 120
 tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
 cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
 caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccgggggtg 300
 aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
 taccgcggga tcgagccgac tttgccaaac tggttcgcgg tcacaaagac cagaaatgcc 420
 gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
 gccagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg 540
 aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
 gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaaact 660
 tcagccagggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctcggaagag 720
 cagtggatcc aggaggacca ggcctcatac atctccttca atgcggcctc caactcgcgg 780
 tcccaaatca aggctgcctt ggacaatgcg ggaaagatta tgagcctgac taaaaccgcc 840
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 attttggaaac taaacgggta cgatcccaaa tatgcggctt ccgtctttct gggatgggccc 960
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 accaaccatcg cggaggccat agcccacact gtgcctttct acgggtgcgt aaactggacc 1080
 aatgagaact ttcccttcaa cgactgtgtc gacaagatgg tgatctggtg ggaggagggg 1140
 aagatgaccg ccaagggtcg ggagtcggcc aaagccattc tcggaggaag caaggtgcgc 1200

gtggaccaga	aatgcaagtc	ctcggccccg	atagaccgga	ctcccgtgat	cgtcacctcc	1260
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 583
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 163 GCT

<400> 583						
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caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccggggtg	300
aaatccatgg	ttttgggacg	tttccctgag	cagattcgcg	aaaaactgat	tcagagaatt	360
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tcagccagggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaa	720
cagtggatcc	aggaggacca	ggcctcatac	atctccttca	atgcggcctc	caactcgcgg	780
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 584
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 175 GCT

<400> 584						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgacttttc	tgacggaatg	gcgcctgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatac	atctccttca	atgcggcctc	caactcgcgg	780
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ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggtgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatgggtgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 585

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 193 GCG

<400> 585

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caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaagg	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
acccagcctg	agctccagtg	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
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gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 586

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 196 GCC

<400> 586

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgc	tcacaaagac	cagaaatggc	420
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aatctcacgg	agcgtaaacg	gttgggtggcg	cagcatctga	cgcacgcctc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
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<210> 587

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 197 GCC

<400> 587

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagattt	ggctcgagga	1920
cactctctct	ga					1932

<210> 588

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 221 GCA

<400> 588

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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ccagacgctt	gcactgcctg	cgatctggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 589
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 228 GCG

<400> 589						
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cgcgactttc	tgacggaatg	gcgcggtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
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aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcg	tcacaaagac	cagaaatggc	420
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gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggcgggggtg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatac	atctccttca	atgcggcctc	caactcgcgg	780
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 590
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 231 GCC

<400> 590						
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tctgacatgg	atctgaatct	gattgagcag	gcaccctga	ccgtggccga	gaagctgcag	180
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caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcg	tcacaaagac	cagaaatggc	420
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aatctcacgg	agcgtaaacg	ggtgggtggc	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660

tcagccaggt	acatggagct	ggtcgggtgg	gccgtggaca	aggggattac	ctcggagaag	720
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tcccaaatca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgaactac	tgggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
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tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 591

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 234 GCG

<400> 591

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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accagcctg	agctccagtg	ggcgtggact	aatatggaac	agtatttaag	cgctgttttg	540
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tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggacg	cggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatac	atctccttca	atgcggcctc	caactcgcgg	780
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cccgaactac	tgggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
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tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 592

<211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 237 GCC

<400> 592

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgacttttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
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aaatccatgg	ttttgggacg	tttcctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcg	tcacaaagac	cagaaatggc	420
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acccagcctg	agctccagtg	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
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cagtggatcc	aggaggacca	ggcctcatac	atctccttca	atgcggcctc	caactcgcgg	780
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tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
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caataaatga	tttaaatcag	gtatgggtgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 593
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 250 GCC

<400> 593

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
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cccgactacc	tgggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
atthttggaac	taaacgggta	cgatcccaaa	tatgcggctt	ccgtctttct	gggatgggccc	960

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caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 594

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 258 GCC

<400> 594

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ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 595

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 260 GCG

<400> 595

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caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 596

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 263 GCC

<400> 596

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaagg	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
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ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 597

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 264 GCG

<400> 597

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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aatcccatgg	ttttgggacg	tttctctgag	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcgggg	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 598

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 334 GCG

<400> 598

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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acccagcctg	agctccagtg	ggcgtggact	aatatggaac	agtatttaag	cgcctgtttg	540
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caataaatga	tttaaatcag	gtatgggtgc	cgatgggttat	cttccagatt	ggctcgagga	1920
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<210> 599

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 335 GCT

<400> 599

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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<210> 600
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 337 GCT

<400> 600							
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cactctctct	ga					1932	

<210> 601
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 341 GCC

<400> 601							
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	ctccagatt	ggctcgagga	1920
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<210> 602

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 342 GCC

<400> 602

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860

caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
cactctctct ga 1932

<210> 603
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 347 GCA

<400> 603
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caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
cactctctct ga 1932

<210> 604
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 350 AAT

<400> 604
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tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
aatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tcgagccgac tttgccaaac tggttcgcg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
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aatctcacgg agcgtaaacg gttgggtggc cagcatctga cgcacgtgtc gcagacgcag 600
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tcagccaggt acatggagct ggtcgggtgg ctcgtggaca aggggattac ctcggagaag 720

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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 605

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 350 GCT

<400> 605

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 606

<211> 1932

<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 354 GCC

<400> 606
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taccgcggga tcgagccgac tttgccaaac tgggtcgcgg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
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gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
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ccagacgctt gcactgcctg cgatctggtc aatgtggatt tggatgactg catctttgaa 1860
caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
cactctctct ga 1932

<210> 607
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 363 GCC

<400> 607
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tctgacatgg atctgaatct gattgagcag gcacccttga ccgtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tcgagccgac tttgccaaac tgggtcgcgg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
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caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 608

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 364 GCT

<400> 608

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
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ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 609

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 367 GCC

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<400> 609
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cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
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taccgcggga tcgagccgac tttgccaaac tggttcgcg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
accagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgcctgtttg 540
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cagtggatcc aggaggacca ggcctcatal atctccttca atgcggcctc caactcgcg 780
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ccagacgctt gcaactgcctg cgatctggtc aatgtggatt tggatgactg catctttgaa 1860
caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
cactctctct ga 1932

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<210> 610
<211> 1932
<212> DNA
<213> Artificial Sequence

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<220>
<223> Mutant rep DNA sequence:370 GCC

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<400> 610
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tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tcgagccgac tttgccaaac tggttcgcg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
accagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgcctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctcgaggaca aggggattac ctcgagagaag 720
cagtggatcc aggaggacca ggcctcatal atctccttca atgcggcctc caactcgcg 780
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aagatgaccg ccaaggtcgt ggagtcggcc aaagccattc tcggaggaag caaggtgcgc 1200
gtggaccaga aatgcaagtc ctcgcccag atagaccga ctcccgtgat cgtcacctcc 1260
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aatctgatgc	tgtttccctg	cagacaatgc	gagagaatga	atcagaattc	aaatatctgc	1680
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 611

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence:376 GCG

<400> 611

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
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<210> 612

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 381 GCG

<400> 612

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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aatctgatgc	tgtttccctg	cagacaatgc	gagagaatga	atcagaattc	aaatatctgc	1680
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ccagacgcct	gcactgcctg	cgatctggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 613

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence:382 GCG

<400> 613

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgcggtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tgggtcgcg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
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tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatac	atctccttca	atgcggcctc	caactcgcg	780
tcccaaatca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tgggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
atlttggaaac	taaacgggta	cgatcccaaa	tatgcggctt	ccgtctttct	gggatgggcc	960
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ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggtatgactg	catcttttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 614
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 389 GCG

<400> 614						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caattttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
accagcctg	agctccagt	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
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tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
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gtggaccaga	aatgcaagtc	ctcggcccag	atagaccgca	ctcccgtgat	cgtcacctcc	1260
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gatataagtg	agcccaaacg	ggtgcgcgag	tcagttgcgc	agccatcgac	gtcagacgcg	1560
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 615
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 407 GCC

<400> 615						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caattttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
accagcctg	agctccagt	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540

aatctcacgg	agcgtaaacg	gttgggtggcg	cagcatctga	cgcacgtgtc	gcagacgcag	600
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tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcgg	780
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cccgaactac	tggtggggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
attttggaac	taaacgggta	cgatcccca	tatgcggctt	ccgtctttct	gggatgggcc	960
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gtggaccaga	aatgcaaggc	ctcggcccag	atagaccgga	ctcccgtgat	cgtaacctcc	1260
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ccagacgctt	gcactgcctg	cgatctggtc	aatgtggatt	tggtatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 616

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 411 GCA

<400> 616

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgcgcgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggatggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
acccagcctg	agctccagtg	ggcgtggact	aatatggaa	agtatttaag	cgctgtttg	540
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tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcgg	780
tcccaaatca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgaactac	tggtggggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
attttggaac	taaacgggta	cgatcccca	tatgcggctt	ccgtctttct	gggatgggcc	960
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ccagacgctt	gcactgcctg	cgatctggtc	aatgtggatt	tggtatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
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<210> 617
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 414 GCT

<400> 617
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 ggcattttctg acagctttgt gaactgggtg gccgagaagg aatgggagtt gccgccagat 120
 tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
 cgcgactttc tgacggaatg gcgcctgtgt agtaaggccc cggaggccct tttctttgtg 240
 caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
 aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
 taccgcggga tcgagccgac tttgccaac tggttcgcgg tcacaaagac cagaaatggc 420
 gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
 acccagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg 540
 aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
 gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
 tcagccagggt acatggagct ggtcgggtgg ctcgtggaca aggggattac ctcggagaag 720
 cagtggatcc aggaggacca ggcctcatat atctccttca atgcggcctc caactcgcgg 780
 tcccaaataca aggctgcctt ggacaatgcg ggaaagatta tgagcctgac taaaaccgcc 840
 cccgactacc tgggtgggcca gcagcccgtg gaggacattt ccagcaatcg gatttataaa 900
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 aatgagaact ttcccttcaa cgactgtgtc gacaagatgg tgatctgggt ggaggagggg 1140
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 aacaccaaca tgtgcgcgtt gattgacggg aactcaacga ccttcgaaca ccagcagccg 1320
 ttgcaagacc ggatgttcaa atttgaactc acccgccgtc tggatcatga ctttgggaag 1380
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 gatataagtg agcccaaacg ggtgcgcgag tcagttgcgc agccatcgac gtcagacgcg 1560
 gaagcttcga tcaactacgc agacaggtac caaaacaaat gttctcgtca cgtgggcatg 1620
 aatctgatgc tgtttccctg cagacaatgc gagagaatga atcagaattc aaatatctgc 1680
 ttcactcacg gacagaaaga ctgtttagag tgctttcccg tgtcagaatc tcaaccggtt 1740
 tctgtcgtca aaaaggcgtg tcagaaactg tgctacattc atcatatcat gggaaaagggtg 1800
 ccagacgctt gcactgcctg cgatctggtc aatgtggatt tggatgactg catctttgaa 1860
 caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
 cactctctct ga 1932

<210> 618
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 420 GCT

<400> 618
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 tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
 cgcgactttc tgacggaatg gcgcctgtgt agtaaggccc cggaggccct tttctttgtg 240
 caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
 aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
 taccgcggga tcgagccgac tttgccaac tggttcgcgg tcacaaagac cagaaatggc 420
 gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
 acccagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg 540
 aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
 gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
 tcagccagggt acatggagct ggtcgggtgg ctcgtggaca aggggattac ctcggagaag 720
 cagtggatcc aggaggacca ggcctcatat atctccttca atgcggcctc caactcgcgg 780
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 cccgactacc tgggtgggcca gcagcccgtg gaggacattt ccagcaatcg gatttataaa 900

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acgaaaaagt	tcggcaagag	gaacaccatc	tggctgtttg	ggcctgcaac	taccgggaag	1020
accaacatcg	cggaggccat	agcccacact	gtgcccttct	acgggtgcgt	aaactggacc	1080
aatgagaact	ttcccttcaa	cgactgtgtc	gacaagatgg	tgatctgggtg	ggaggagggg	1140
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gtggaccaga	aatgcaagtc	ctcgcccag	tcagttgcgc	ctcccgtgat	cgtcacccgt	1260
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gtcaccaagc	aggaagtcaa	agactttttc	cgggtgggcaa	aggatcacgt	ggttgagggtg	1440
gagcatgaat	tctacgtcaa	aaaggggtgga	gccaagaaaa	gaccgcgcc	cagtgcgcga	1500
gatataagt	agcccaaacg	ggtgcgcgag	tcagttgcgc	agccatcgac	gtcagacgcg	1560
gaagcttcga	tcaactacgc	agacaggtag	caaaacaaat	gttctcgtca	cgtgggcatg	1620
aatctgatgc	tgtttccctg	cagacaatgc	gagagaatga	atcagaattc	aaatatctgc	1680
ttcactcacg	gacagaaaga	ctgttttagag	tgctttcccg	tgtcagaatc	tcaaccgcgtt	1740
tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 619
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 421 GCC

<400> 619						
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aaatccatgg	ttttgggacg	tttctctgag	cagattcgcg	aaaaactgat	tcagagaatt	360
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gccggaggcg	ggaacaagg	ggtggatgag	tgctacatcc	ccaattactt	gtccccaaa	480
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 620
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 422 GCC

<400> 620

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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcacagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 621

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 424 GCG

<400> 621

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cactctctct	ga					1932

<210> 622
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 428 GCT

<400> 622						
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cactctctct	ga					1932

<210> 623
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence:429 GCC

<400> 623						
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<210> 624

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 438 GCG

<400> 624

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<210> 625

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 440 GCG

<400> 625

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caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 626

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 451 GCC

<400> 626

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caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360

taccgcgggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
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caataaatga	tttaaatcag	gtatggctgc	cgatgggtat	cttcagatt	ggctcgagga	1920
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<210> 627

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 460 GCG

<400> 627

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ccagacgctt	gcaactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
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<210> 628
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 462 GCC

<400> 628						
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acccagcctg	agctccagt	ggcgtggact	aatatgggaa	agtatttaag	cgctgtttg	540
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<210> 629
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 462 ATA

<400> 629						
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<210> 630
<211> 1932
<212> DNA
<213> Artificial Sequence
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<220>
<223> Mutant rep DNA sequence: 484 GCC

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tctgacatgg	atctgaatct	gatttagcag	gcaccctga	ccgtggccga	gaagctgcag	180
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<210> 631

<211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 488 GCG

<400> 631

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aaatccatgg	ttttgggacg	tttcctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
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<210> 632
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 495 GCC

<400> 632

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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcg	tcacaaagac	cagaaatggc	420
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acccagcctg	agctccagt	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
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tcccaaatca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
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<223> Mutant rep DNA sequence: 497 CGA

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<400> 634
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tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag      180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg      240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccgggggtg      300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt      360
taccgcggga tcgagccgac tttgccaaac tggttcgcgg tcacaaagac cagaaatggc      420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa      480
acccagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg      540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag      600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact      660
tcagccaggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctcgagaag      720
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ccagacgctt gcactgcctg cgatctgggtc aatgtggatt tggatgactg catctttgaa      1860
caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga      1920
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<210> 635

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 497 CTC

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tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag      180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg      240
caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccgggggtg      300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt      360
taccgcggga tcgagccgac tttgccaaac tggttcgcgg tcacaaagac cagaaatggc      420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa      480
acccagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg      540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag      600
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cagtggatcc aggaggacca ggccctcatac atctccttca atgcggcctc caactcgcg      780
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aatgagaact ttcccttcaa cgactgtgtc gacaagatgg tgatctggtg ggaggagggg      1140
aagatgaccg ccaaggtcgt ggagtcggcc aaagccattc tcggaggaag caaggtgcgc      1200
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<210> 636
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 497 TAC

<400> 636						
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<210> 637
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 498 GCT

<400> 637						
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<210> 638
<211> 1932
<212> DNA
<213> Artificial Sequence
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<220>
<223> Mutant rep DNA sequence:499 GCC

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ccagacgctt	gcactgcctg	cgatctgggc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 639
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 503 GCG

<400> 639						
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
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<210> 640
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 510 GCA

<400> 640						
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tctgacatgg	atctgaatct	gattgagcag	gcaccctga	ccgtggccga	gaagctgcag	180
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caatttgaga	agggagagag	ctactccac	atgcacgtgc	tcgtggaaac	caccggggtg	300
aaatccatgg	ttttgggacg	tttccctgag	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420

gccggaggcg	ggaacaagggt	ggtggatgag	tgctacatcc	ccaattactt	gctccccaaa	480
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tcagccaggt	acatggagct	ggctcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
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caataaatga	thtaaatcag	gtatggctgc	cgatggthtat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 641

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 511 GCA

<400> 641

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tctgacatgt	atctgaatct	gattgagcag	gcaccctcta	ccgtggccca	gaagctgcag	180
cgcgactttt	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tgtctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
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tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcaactgcctg	cgatctggct	aatgtggatt	tggatgactg	catctttgaa	1860

caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga
cactctctct ga

1920
1932

<210> 642
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 512 GCT

<400> 642
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ggcattttctg acagctttgt gaactgggtg gccgagaagg aatgggagtt gccgccagat 120
tctgacatgg atctgaatct gattgagcag gcacccttga ccgtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caattttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tcgagccgac tttgccaaac tggttcgcg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
acccagcctg agctccagt ggctggact aatatggaac agtatttaag cgctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctctgaggaca aggggattac ctcggaag 720
cagtggatcc agggagacca ggccctcatac atctccttca atgcggcctc caactcgcg 780
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ccagacgctt gcactgcctg cgatctggtc aatgtggatt tggatgactg catctttgaa 1860
caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
cactctctct ga 1932

<210> 643
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 516 GCG

<400> 643
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ggcattttctg acagctttgt gaactgggtg gccgagaagg aatgggagtt gccgccagat 120
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cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caattttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tcgagccgac tttgccaaac tggttcgcg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
acccagcctg agctccagt ggctggact aatatggaac agtatttaag cgctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctctgaggaca aggggattac ctcggaag 720

cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcg	780
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cccgactacc	tgggtggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 644

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 517 GCT

<400> 644

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tctgacattgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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aatctgatgc	tgthttccctg	cagacaatgc	gagagaaatga	atcagaattc	aaatatctgc	1680
ttcactcacg	gacagaaaaga	ctgttttagag	tgctttcccg	tgtcagaatc	tcaaccctgt	1740
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ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttcagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 645

<211> 1932

<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 517 AAC

<400> 645
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tctgacatgg atctgaatct gattgagcag gcaccctga cegtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgcgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tctggaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tctgagccgac tttgccaaac tgggttcgcg tcaaaagac cagaaatggc 420
gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
accagcctg agctccagtg ggctggact aatatggaac agtatattaag cgctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
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cagtggatcc aggaggacca ggctcctac atctccttca atgcggcctc caactcgcg 780
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ccagacgctt gactgcctg cgatctggtc aatgtggatt tggatgactg catctttgaa 1860
caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
cactctctct ga 1932

<210> 646
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 518 GCA

<400> 646
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ggcattttctg acagctttgt gaactgggtg gccgagaagg aatgggagtt gccgccagat 120
tctgacatgg atctgaatct gattgagcag gcaccctga cegtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgcgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttccac atgcacgtgc tctggaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tctgagccgac tttgccaaac tgggttcgcg tcaaaagac cagaaatggc 420
gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
accagcctg agctccagtg ggctggact aatatggaac agtatattaag cgctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctcgagaag 720
cagtggatcc aggaggacca ggctcctac atctccttca atgcggcctc caactcgcg 780
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atthttggaac taaacgggta cgatcccaaa tatgcggctt ccgtctttct gggatgggccc 960
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<400> 648
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tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttcac atgcacgtgc tcgtggaaac caccggggtg 300
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taccgcggga tcgagccgac tttgccaaac tggttcgcg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctccccaaa 480
accagcctg agtccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctccgagaag 720
cagtggatcc agggaggacca ggccctcaca atctccttca atgcggcctc caactcgcg 780
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ccagacgctt gcaactgcctg cgatctgggt aatgtggatt tggatgactg catctttgaa 1860
caataaatga tttaaatcag gtatggctgc cgatggttat cttccagatt ggctcgagga 1920
cactctctct ga 1932

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<210> 649
<211> 1932
<212> DNA
<213> Artificial Sequence

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<220>
<223> Mutant rep DNA sequence: 600 GCG

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<400> 649
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tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag 180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
caatttgaga agggagagag ctacttcac atgcacgtgc tcgtggaaac caccggggtg 300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
taccgcggga tcgagccgac tttgccaaac tggttcgcg tcacaaagac cagaaatggc 420
gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctccccaaa 480
accagcctg agtccagtg ggcgtggact aatatggaac agtatttaag cgctgtttg 540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggatgatcag atcaaaaact 660
tcagccaggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctccgagaag 720
cagtggatcc agggaggacca ggccctcaca atctccttca atgcggcctc caactcgcg 780
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aatgagaact ttcccttcaa cgactgtgtc gacaagatgg tgatctggtg ggaggagggg 1140
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tctgtcgtca	aaaaggcgta	tcagaaactg	tgctacattc	atcatatcat	gggaaaggcg	1800
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 650
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 601 GCA

<400> 650						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgcctgtgt	agtaaggccc	cggaggccct	tttctttgtg	240
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aaatccatgg	ttttgggacg	tttctctgag	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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aatctcacgg	agcgtaaacg	gttgggtggcg	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggtgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
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gcagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggtatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 651
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 335 420 495 GCT GCC GCC

<400> 651						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgcctgtgt	agtaaggccc	cggaggccct	tttctttgtg	240

caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
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ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatacag	gtatgggtgc	cgatgggtat	cttcagatt	ggctcgagga	1920
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<210> 652

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 39 140 GCA GCC

<400> 652

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caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatgcc	420
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acccagcctg	agctccagtg	ggcgtggact	aatatggaac	agtatttaag	cgctgttttg	540
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cactctctct	ga					1932

<210> 653
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 279 428 451 GCC GCT GCC

<400> 653						
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cactctctct	ga					1932

<210> 654
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 125 237 600 GCG GCC GCG

<400> 654						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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caattttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttctgagtg	cagattcgcg	aaaaactgat	tcagagaatt	360
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 655

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 163 259 GCT GCG

<400> 655

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taccgcggga	tcgagccgac	thtgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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cactctctct	ga					1932

<210> 656
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 17 127 189 GCG GCT GCG

<400> 656

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cgcgactttc	tgacggaatg	gcgcggtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
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taccgcggga	tcgagccggc	tttgccaaac	tgggtcgcg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctccccaaa	480
acccagcctg	agctccagt	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
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<210> 657
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 350 428 GCT GCT

<400> 657

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgcggtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
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taccgcggga	tcgagccgac	tttgccaaac	tgggtcgcg	tcacaaagac	cagaaatggc	420
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cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcg	780
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cccgactacc	tgggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900

at t t t t g g a a c	t a a a c g g g t a	c g a t c c c c a a	t a t g c g g c t t	c c g t c t t t c t	g g g a t g g g c c	960
a c g a a a a a g t	t c g g c a a g a g	g a a c a c c a t c	t g g c t g t t t g	g g c c t g c a a c	t a c c g g g a a g	1020
a c c a a c a t c g	c g g a g g c c a t	a g c c c a c g c t	g t g c c c t t c t	a c g g g t g c g t	a a a c t g g a c c	1080
a a t g a g a a c t	t t c c c t t c a a	c g a c t g t g t c	g a c a a g a t g g	t g a t c t g g t g	g g a g g a g g g g	1140
a a g a t g a c c g	c c a a g g t c g t	g g a g t c g g c c	a a a g c c a t t c	t c g g a g g a a g	c a a g g t g c g c	1200
g t g g a c c a g a	a a t g c a a g t c	c t c g g c c c a g	a t a g a c c c g a	c t c c c g t g a t	c g t c a c c t c c	1260
a a c a c c a a c a	t g t g c g c c g t	g g c t g a c g g g	a a c t c a a c g a	c c t t c g a a c a	c c a g c a g c c g	1320
t t g c a a g a c c	g g a t g t t c a a	a t t t g a a c t c	a c c c g c c g t c	t g g a t c a t g a	c t t t g g g a a g	1380
g t c a c c a a g c	a g g a a g t c a a	a g a c t t t t t t c	c g g t g g g c a a	a g g a t c a c g t	g g t t g a g g t g	1440
g a g c a t g a a t	t c t a c g t c a a	a a a g g g t g g a	g c c a a g a a a a	g a c c c g c c c c	c a g t g a c g c a	1500
g a t a t a a g t g	a g c c c a a a c g	g g t g c g c g a g	t c a g t t g c g c	a g c c a t c g a c	g t c a g a c g c g	1560
g a a g c t t c g a	t c a a c t a c g c	a g a c a g g t a c	c a a a a c a a a t	g t t c t c g t c a	c g t g g g c a t g	1620
a a t c t g a t g c	t g t t t c c c t g	c a g a c a a t g c	g a g a g a a t g a	a t c a g a a t t c	a a a t a t c t g c	1680
t t c a c t c a c g	g a c a g a a a g a	c t g t t t a g a g	t g c t t t c c c g	t g t c a g a a t c	t c a a c c c g t t	1740
t c t g t c g t c a	a a a a g g c g t a	t c a g a a a c t g	a a t g t g g a t t	t g g a t g a c t g	g g g a a a g g t g	1800
c c a g a c g c t t	g c a c t g c c t g	c g a t c t g g t c	a a t g t g g a t t	t g g a t g a c t g	c a t c t t t g a a	1860
c a a t a a a t g a	t t t a a a t c a g	g t a t g g c t g c	c g a t g g t t a t	c t t c c a g a t t	g g c t c g a g g a	1920
c a c t c t c t c t	g a					1932

<210> 658

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 54 338 495 GCC GCC GCC

<400> 658

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g g c a t t t c t g	a c a g c t t t g t	g a a c t g g g t g	g c c g a g a a g g	a a t g g g a g t t	g c c g c c a g a t	120
t c t g a c a t g g	a t c t g a a t c t	g a t t g a g c a g	g c a c c c c t g g	c c g t g g c c g a	g a a g c t g c a g	180
c g c g a c t t t c	t g a c g g a a t g	g c g c c g t g t g	a g t a a g g c c c	c g g a g g c c c t	t t t c t t t g t g	240
c a a t t t g a g a	a g g g a g a g a g	c t a c t t c c a c	a t g c a c g t g c	t c g t g g a a a c	c a c c g g g g t g	300
a a a t c c a t g g	t t t t g g g a c g	t t t c c t g a g t	c a g a t t c g c g	a a a a a c t g a t	t c a g a g a a t t	360
t a c c g c g g g a	t c g a g c c g a c	t t t g c c a a a c	t g g t t c g c g g	t c a c a a a g a c	c a g a a a t g g c	420
g c c g g a g g c g	g g a a c a a g g t	g g t g g a t g a g	t g c t a c a t c c	c c a a t t a c t t	g t c c c c c a a a	480
a c c c a g c c t g	a g c t c c a g t g	g g c g t g g a c t	a a t a t g g a a c	a g t a t t t a a g	c g c c t g t t t g	540
a a t c t c a c g g	a g c g t a a a c g	g t t g g t g g c g	c a g c a t c t g a	c g c a c g t g t c	g c a g a c g c a g	600
g a g c a g a a c a	a a g a g a a t c a	g a a t c c c a a t	t c t g a t g c g c	c g g t g a t c a g	a t c a a a a a c t	660
t c a g c c a g g t	a c a t g g a g c t	g g t c g g g t g g	c t c g t g g a c a	a g g g g a t t a c	c t c g g a g a a g	720
c a g t g g a t c c	a g g a g g a c c a	g g c c t c a t a c	a t c t c c t t c a	a t g c g g c c t c	c a a c t c g c g g	780
t c c c a a a t c a	a g g c t g c c t t	g g a c a a t g c g	g g a a a g a t t a	t g a g c c t g a c	t a a a a c c g c c	840
c c c g a c t a c c	t g g t g g g c c a	g c a g c c c g t g	g a g g a c a t t t	c c a g c a a t c g	g a t t t a t a a a	900
a t t t t g g a a c	t a a a c g g g t a	c g a t c c c c a a	t a t g c g g c t t	c c g t c t t t c t	g g g a t g g g c c	960
a c g a a a a a g t	t c g g c a a g a g	g a a c a c c a t c	t g g c t g t t t g	g g c c t g c a a c	t g c c g g g a a g	1020
a c c a a c a t c g	c g g a g g c c a t	a g c c c a c a c t	g t g c c c t t c t	a c g g g t g c g t	a a a c t g g a c c	1080
a a t g a g a a c t	t t c c c t t c a a	c g a c t g t g t c	g a c a a g a t g g	t g a t c t g g t g	g g a g g a g g g g	1140
a a g a t g a c c g	c c a a g g t c g t	g g a g t c g g c c	a a a g c c a t t c	t c g g a g g a a g	c a a g g t g c g c	1200
g t g g a c c a g a	a a t g c a a g t c	c t c g g c c c a g	a t a g a c c c g a	c t c c c g t g a t	c g t c a c c t c c	1260
a a c a c c a a c a	t g t g c g c c g t	g a t t g a c g g g	a a c t c a a c g a	c c t t c g a a c a	c c a g c a g c c g	1320
t t g c a a g a c c	g g a t g t t c a a	a t t t g a a c t c	a c c c g c c g t c	t g g a t c a t g a	c t t t g g g a a g	1380
g t c a c c a a g c	a g g a a g t c a a	a g a c t t t t t c	c g g t g g g c a a	a g g a t c a c g t	g g t t g a g g t g	1440
g a g c a t g a a t	t c t a c g t c a a	a a a g g g t g g a	g c c a a g a a a a	g a g c c g c c c c	c a g t g a c g c a	1500
g a t a t a a g t g	a g c c c a a a c g	g g t g c g c g a g	t c a g t t g c g c	a g c c a t c g a c	g t c a g a c g c g	1560
g a a g c t t c g a	t c a a c t a c g c	a g a c a g g t a c	c a a a a c a a a t	g t t c t c g t c a	c g t g g g c a t g	1620
a a t c t g a t g c	t g t t t c c c t g	c a g a c a a t g c	g a g a g a a t g a	a t c a g a a t t c	a a a t a t c t g c	1680
t t c a c t c a c g	g a c a g a a a g a	c t g t t t a g a g	t g c t t t c c c g	t g t c a g a a t c	t c a a c c c g t t	1740
t c t g t c g t c a	a a a a g g c g t a	t c a g a a a c t g	t g c t a c a t t c	a t c a t a t c a t	g g g a a a g g t g	1800
c c a g a c g c t t	g c a c t g c c t g	c g a t c t g g t c	a a t g t g g a t t	t g g a t g a c t g	c a t c t t t g a a	1860
c a a t a a a t g a	t t t a a a t c a g	g t a t g g c t g c	c g a t g g t t a t	c t t c c a g a t t	g g c t c g a g g a	1920
c a c t c t c t c t	g a					1932

<210> 659

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 350 420 GCT GCC

<400> 659

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
acccagcctg	agctccagtg	ggcgtggact	aatatggaaac	agtatttaag	cgctgtttg	540
aatctcacgg	agcgtaaacg	gttggcggcg	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcgg	780
tcccaaatca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
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aatgagaact	ttcccttcaa	cgactgtgtc	gacaagatgg	tgatctgggtg	ggaggagggg	1140
aagatgaccg	ccaaggtcgt	ggagtccggc	aaagccattc	tcggaggaag	caaggtgcgc	1200
gtggaccaga	aatgcaagtc	ctcggcccag	atagacccga	ctcccgatgat	cgtcaccgcc	1260
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gatataagtg	agcccaaacg	ggtgcgcgag	tcagttgcgc	agccatcgac	gtcagacgcg	1560
gaagcttcga	tcaactacgc	agacaggtag	caaaacaaat	gttctcgtca	cgtgggcatg	1620
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ttcactcacg	gacagaaaaga	ctgttttagag	tgctttcccg	tgtcagaatc	tcaaccgctt	1740
tctgtcgtca	aaaaggcgta	tcagaaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggtgactg	catctttgaa	1860
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cactctctct	ga					1932

<210> 660
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 189 197 518 GCG GCG GCA

<400> 660

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
acccagcctg	agctccagtg	ggcgtggact	aatatggaaac	agtatttaag	cgctgtttg	540
aatctcacgg	agcgtaaacg	gttggcggcg	cagcatctga	cgcacgtggc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcgg	780
tcccaaatca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
attttggaaac	taaacgggta	cgatcccaaa	tatgcggctt	ccgtctttct	gggatgggccc	960
acgaaaaagt	tcggcaagag	gaacaccatc	tggtctgtttg	ggcctgcaac	taccgggaag	1020
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aatgagaact	ttcccttcaa	cgactgtgtc	gacaagatgg	tgatctgggtg	ggaggagggg	1140
aagatgaccg	ccaaggtcgt	ggagtccggc	aaagccattc	tcggaggaag	caaggtgcgc	1200

gtggaccaga	aatgcaagtc	ctcggcccag	atagaccoga	ctcccgtgat	cgtcacctcc	1260
aacaccaaca	tgtgcccgt	gattgacggg	aactcaacga	ccttcgaaca	ccagcagccg	1320
ttgcaagacc	ggatgttcaa	atgtgaactc	acccgcgcgt	tggatcatga	ctttgggaag	1380
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gatataagtg	agcccaaagc	ggtgcccgcg	tcagttgcgc	agccatcgac	ggcagacgcg	1560
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ttcactcacg	gacagaaaaga	ctgtttagag	tgctttcccg	tgtcagaatc	tcaacccggt	1740
tctgtcgtca	aaaaggcgta	tcagaaaactg	tgctacattc	atcatatcat	gggaaaagggtg	1800
ccagacgctt	gcatctgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
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cactctctct	ga					1932

<210> 661
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 468 516 GCC GCG

<400> 661						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgccgtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
acccagcctg	agctccaagt	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
aatctcacgg	agcgtaaaacg	gttggtggcg	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
tcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
cagtggatcc	aggaggacca	ggcctcatat	atctccttca	atgcggcctc	caactcgcgg	780
tcccaaataca	aggctgcctt	ggacaatgcg	ggaaagatta	tgagcctgac	taaaaccgcc	840
cccgactacc	tggtgggcca	gcagcccgtg	gaggacattt	ccagcaatcg	gatttataaa	900
attttggaac	taaacgggta	cgatcccaaa	tatgcggctt	ccgtctttct	gggatgggcc	960
acgaaaaagt	tcggcaagag	gaacaccatc	tggtctgttg	ggcctgcaac	taccgggaag	1020
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ttcactcacg	gacagaaaaga	ctgtttagag	tgctttcccg	tgtcagaatc	tcaacccggt	1740
tctgtcgtca	aaaaggcgta	tcagaaaactg	tgctacattc	atcatatcat	gggaaaagggtg	1800
ccagacgctt	gcatctgcctg	cgatctgggtc	aatgtggatt	tggatgactg	catctttgaa	1860
caataaatga	tttaaatacag	gtatggctgc	cgatgggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 662
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 127 221 350 54 140 GCT
 GCA GCT GCC GCC

<400> 662

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tctgacatgg	atctgaatct	gattgagcag	gcacccctgg	ccgtggccga	gaagctgcag	180
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taccgcggga	tcgagccggc	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatgcc	420
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accagcctg	agctccagtg	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
aatctcacgg	agcgtaaacg	gttgggtggc	cagcatctga	cgcacgtgtc	gcagacgcag	600
gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
gcagccaggt	acatggagct	ggtcgggtgg	ctcgtggaca	aggggattac	ctcggagaag	720
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attttggaac	taaacgggta	cgatcccaaa	tatgcggctt	ccgtctttct	gggatggg	960
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gtcaccaagc	aggaagtcaa	agactttttc	cggatgggcaa	aggatcacgt	ggttgaggtg	1440
gagcatgaat	tctacgtcaa	aaagggtgga	gccaagaaaa	gaccgcgcgc	cagtgacgca	1500
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tctgtcgtca	aaaaggcgta	tcagaaaactg	tgctacattc	atcatatcat	gggaaagggtg	1800
ccagacgctt	gcactgcctg	cgatctgggtc	aatgtggatt	tggtgatgactg	catctttgaa	1860
caataaatga	tttaaatcag	gtatgggtgc	cgatgggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 663

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 221 285 GCA GCG

<400> 663

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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
cgcgactttc	tgacggaatg	gcgcggtgtg	agtaaggccc	cggaggccct	tttctttgtg	240
caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccggggtg	300
aaatccatgg	ttttgggacg	tttcttgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
gccggaggcg	ggaacaaggt	ggtggatgag	tgctacatcc	ccaattactt	gctcccaaaa	480
accagcctg	agctccagtg	ggcgtggact	aatatggaac	agtatttaag	cgctgtttg	540
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gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggatgatcag	atcaaaaact	660
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<210> 667
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 197 412 GCG GCC

<400> 667						
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<210> 668
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 412 495 511 GCC GCC GCA

<400> 668						
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<210> 669

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 98 422 GCC GCC

<400> 669

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cactctctct	ga					1932

<210> 670
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 17 127 189 GCG GCT GCG

<400> 670
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 cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
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 aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
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 cactctctct ga 1932

<210> 671
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 20 54 495 GCC GCC GCC

<400> 671
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 cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
 caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccgggggtg 300
 aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt 360
 taccgcggga tcgagccgac tttgccaac tggttcgcg tcacaaagac cagaaatggc 420
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 672

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 54 163 GCC GCT

<400> 672

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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 673

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 259 54 GCG GCC

<400> 673

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<210> 674
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 335 399 GCT GCG

<400> 674

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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 675

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 221 432 GCA GCA

<400> 675

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<210> 676

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 259 516 GCG GCG

<400> 676

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<210> 677

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 495 516 GCC GCG

<400> 677

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<210> 678

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 414 14 GCT GCC

<400> 678

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<210> 679

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 74 402 495 GCG GCC GCC

<400> 679

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caatttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccgggggtg	300
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ccagacgctt	gcactgcctg	cgatctggtc	aatgtggatt	tggatgactg	catctttgaa	1860
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<210> 681
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 290 338 GCG GCC

<400> 681						
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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 682
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 140 511 GCC GCA

<400> 682						
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caattttgaga	agggagagag	ctacttccac	atgcacgtgc	tcgtggaaac	caccggggtg	300
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcg	tcacaaagac	cagaaatggc	420
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caataaatga	tttaaatcag	gtatggctgc	cgatgggttat	cttccagatt	ggctcgagga	1920
cactctctct	ga					1932

<210> 683

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 86 378 GCG GCG

<400> 683

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<210> 684

<211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 54 86 GCC GCG

<400> 684
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 cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
 caatttgaga agggagcgag ctacttccac atgcacgtgc tcgtggaaac caccgggggtg 300
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 cactctctct ga 1932

<210> 685
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 214 495 140 GCG GCC GCC

<400> 685
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 cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg 240
 caatttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccgggggtg 300
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 gccggaggcg ggaacaaggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa 480
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 aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag 600
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 cagtggatcc aggaggacca ggcctcatat atctccttca atgcggcctc caactcgcgg 780
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cactctctct	ga					1932

<210> 686
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 495 511 GCC GCA

<400> 686						
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<210> 687
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 495 54 GCC GCC

<400> 687

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<210> 688

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 197 495 GCG GCC

<400> 688

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<210> 691

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 197 420 GCG GCC

<400> 691

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<210> 692

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 54 338 495 GCC GCC GCC

<400> 692

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<210> 693

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 197 427 GCG GCG

<400> 693

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<210> 694

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 54 228 370 387 GCC GCC
GCC GCG

<400> 694

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<210> 695
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 221 289 GCA GCC

<400> 695						
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<210> 696
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 54 163 GCC GCT

<400> 696						
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<210> 697

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 341 407 420 GCC GCC GCC

<400> 697

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<210> 698

<211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 54 228 GCC GCC

<400> 698

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<210> 699
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 96 125 511 GCA GCG GCA

<400> 699

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<210> 700

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 197 420 GCG GCC

<400> 700

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caataaatga	tttaaatcag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 701

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 334 428 499 GCG GCT GCC

<400> 701

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<210> 702

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 197 414 GCG GCT

<400> 702

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<210> 705

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 29 260 GCG GCG

<400> 705

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<210> 706

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 4 484 GCT GCC

<400> 706

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<210> 707

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 258 124 132 GCC GCC GCC

<400> 707

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<210> 708

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 231 497 GCC GCC

<400> 708

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<210> 709

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 221 258 GCA GCC

<400> 709

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<210> 710

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 234 264 326 GCG GCG GCC

<400> 710

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<210> 711

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 153 398 AGC GCG

<400> 711

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<210> 712

<211> 1932

<212> DNA
<213> Artificial Sequence

<220>
<223> Mutant rep DNA sequence: 53 216 GCG GCC

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<210> 713
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<220>
<223> Mutant rep DNA sequence: 22 382 GCT GCG

<400> 713
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<210> 714

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 231 411 GCC GCA

<400> 714

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caataaatga	tttaaatacag	gtatggctgc	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 715

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 59 305 GCG GCC

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<400> 715
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<210> 716
<211> 1932
<212> DNA
<213> Artificial Sequence

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<220>
<223> Mutant rep DNA sequence: 53 231 GCG GCC

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cgcgactttc tgacggaatg gcgcgtgtg agtaaggccc cggaggccct tttctttgtg 240
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<210> 717
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 258 498 GCC GCT

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<210> 718
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 88 231 GCC GCC

<400> 718						
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<210> 719

<211> 1932

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutant rep DNA sequence: 101 363 GCA GCC

<400> 719

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<210> 720
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 354 132 GCC GCC

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<210> 721
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutant rep DNA sequence: 10 132 GCG GCC

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<210> 722
<211> 321
<212> DNA
<213> Artificial Sequence
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ccq	ccat	q	q				321

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<210> 725
 <211> 321
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> intron 630 tgc tca

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<210> 726
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> mutant rep DNA sequence: 598 GAC

<400> 726						
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<210> 727
 <211> 1932

<212> DNA
<213> Artificial Sequence

<220>
<223> mutant rep DNA sequence: 598 AGC

<400> 727

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<210> 728
<211> 1932
<212> DNA
<213> Artificial Sequence

<220>
<223> mutant rep DNA sequence: 600 CCG

<400> 728

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accaacatcg	cggaggccat	agcccacact	gtgcccttct	acgggtgCGT	aaactggacc	1080
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<210> 729
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> mutant rep DNA sequence: 630 GCCG

<400> 729						
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tctgacatgg	atctgaatct	gattgagcag	gcacccctga	ccgtggccga	gaagctgcag	180
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caatttgaga	agggagagag	ctactttccac	atgcacgtgc	tcgtggaaac	caccggggTg	300
aaatccatgg	ttttgggacg	tttCctgagt	cagattcgcg	aaaaactgat	tcagagaatt	360
taccgcggga	tcgagccgac	tttgccaaac	tggTtcgcgg	tcacaaagac	cagaaatggc	420
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gagcagaaca	aagagaatca	gaatcccaat	tctgatgcgc	cggTgatcag	atcaaaaaact	660
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ccagacgctt	gcactgcctg	cgatctggTc	aatgtggatt	tggatgactg	catctttgaa	1860
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<210> 730
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> mutant rep DNA sequence: 630 CGC

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<400> 730
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tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag      180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg      240
caattttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg      300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt      360
taccgcggga tcgagccgac tttgccaaac tggttcgcgg tcacaaagac cagaaatggc      420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa      480
accagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgcctgtttg      540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag      600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggtgatcag atcaaaaact      660
tcagccaggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctcggaag      720
cagtggatcc aggaggacca ggcctcatal atctccttca atgcggcctc caactcgcg      780
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cccgactacc tgggtggcca gcagcccggt gaggacattt ccagcaatcg gatttataaa      900
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acgaaaaagt tcggcaagag gaacaccatc tggctgtttg ggctgcaac taccgggaag      1020
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caataaatga tttaaatcag gtatggccgc cgatgggtat cttccagatt ggctcgagga      1920
cactctctct ga
1932

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<210> 731
<211> 1932
<212> DNA
<213> Artificial Sequence

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<220>
<223> mutant rep DNA sequence: 630 TCA

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<400> 731
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tctgacatgg atctgaatct gattgagcag gcacccctga ccgtggccga gaagctgcag      180
cgcgactttc tgacggaatg gcgccgtgtg agtaaggccc cggaggccct tttctttgtg      240
caattttgaga agggagagag ctacttccac atgcacgtgc tcgtggaaac caccggggtg      300
aaatccatgg ttttgggacg tttcctgagt cagattcgcg aaaaactgat tcagagaatt      360
taccgcggga tcgagccgac tttgccaaac tggttcgcgg tcacaaagac cagaaatggc      420
gccggaggcg ggaacaagggt ggtggatgag tgctacatcc ccaattactt gctcccaaaa      480
accagcctg agctccagtg ggcgtggact aatatggaac agtatttaag cgcctgtttg      540
aatctcacgg agcgtaaacg gttggtggcg cagcatctga cgcacgtgtc gcagacgcag      600
gagcagaaca aagagaatca gaatcccaat tctgatgcgc cggtgatcag atcaaaaact      660
tcagccaggt acatggagct ggtcgggtgg ctctgggaca aggggattac ctcggaag      720
cctggatcc caggaggacca ggcctcatal atctccttca atgcggcctc caactcgcg      780
tcccaaatca aggtgcctt ggacaatgcg ggaaagatta tgagcctgac taaaaccgcc      840
cccgactacc tgggtggcca gcagcccggt gaggacattt ccagcaatcg gatttataaa      900
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aatgagaact ttcccttcaa cgactgtgtc gacaagatgg tgatctggtg ggaggagggg      1140
aagatgaccg ccaaggtcgt ggagtcggcc aaagccattc tcggagggaag caaggtgcgc      1200
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aacaccaaca tgtgcgccgt gattgacggg aactcaacga ccttcgaaca ccagcagccg      1320
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caataaatga	tttaaatcag	gtatggctca	cgatggttat	cttcagatt	ggctcgagga	1920
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<210> 732
 <211> 1932
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> mutant rep DNA sequence: 630 CCT

<400> 732						
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taccgcggga	tcgagccgac	tttgccaaac	tggttcgcgg	tcacaaagac	cagaaatggc	420
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<210> 733
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> CMV 1 primer

<400> 733		
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<210> 734
 <211> 23

